DOCUMENT RESUME

ED 124 804 95 CE 007 448

TITLE	Providing Special Teacher Education Services to Selected Vocational Programs in Minnesota.
INSTITUTION	Minnesota Univ., Minneapolis. Dept. of Vocational and Technical Education.
SPONS AGENCY	Minnesota State Dept. of Education, St. Paul. Div. of Vocational and Technical Education.; Office of Education (DHEW), Washington, D.C.
REPORT NO	VT-102-990
PUB DATE	75
NOTE	227p.; Parts of some of the University of Minnesota Communications Bulletins and Information Service Series leaflets will not reproduce well in microfiche due to lightness of type
EDRS PRICE	MF-$0.83 HC-$12.71 Plus Postage.
DESCRIPTORS	*Beginning Teachers; Delivery Systems; *Individualized Instruction; Inservice Courses; *Instructional Materials; Models; *Performance Based Teacher Education; Post Secondary Education; Secondary Education; Vocational Education; *Vocational Education Teachers

ABSTRACT

The purpose of this project was to develop and field test a model for delivering teaching competency instruction to inexperienced vocational teachers. An off-campus course was developed utilizing six individualized learning packages or modules based on 38 competencies considered most important for beginning teachers. Twelve teachers from the three participating vocational schools were selected to field test the course. Each group of three students received assistance and support from a local and a university resource person. Results of the field test and evaluation of the course by students, resource persons, and project staff provide the basis for recommendations for future planning of similar delivery systems. Included in the document are a bibliography, instrument for establishing competency priorities, course resource materials, and, comprising 180 pages, the complete texts of the six modules: audiovisual equipment and materials, writing behaviorally-oriented objectives, overview of developing and planning a course, constructing a lesson plan, planning and executing an introduction and summary for a lesson, and selecting and executing the different teaching strategies. Each module contains an introduction, performance objectives, references, equipment and materials needed, directions related to what and how to study, resource information about the topic, learning activities, test questions, self-evaluation checklist, and evaluation of the module. (Author/RG)

Documents acquired by ERIC include many informal unpublished materials not available from other sources. ERIC makes every effort to obtain the best copy available. Nevertheless, items of marginal reproducibility are often encountered and this affects the quality of the microfiche and hardcopy reproductions ERIC makes available via the ERIC Document Reproduction Service (EDRS). EDRS is not responsible for the quality of the original document. Reproductions supplied by EDRS are the best that can be made from the original.

ED124094

PROVIDING
SPECIAL TEACHER EDUCATION SERVICES
TO
SELECTED VOCATIONAL PROGRAMS
IN MINNESOTA

RESEARCH PROJECT REPORT

DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION

COLLEGE OF EDUCATION

UNIVERSITY OF MINNESOTA

1975

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

CEO 74 48

TITLE: Providing Special Teacher Education Services to Selected Vocational Programs in Minnesota

INITIATED BY: Department of Vocational and Technical Education
College of Education
University of Minnesota
Minneapolis, MN 55455

Jerome Moss, Jr.; Chairman

AUTHORIZED BY: Office of Sponsored Progresses
Johnston Hall
University of Minnesota

FUNDED BY: Vocational Division
Minnesota State Department of Education
Funding Under Sec. 553, Part F, Title V
Higher Education Act of 1965 as Amended

DURATION: July 1, 1974 to September 30, 1975

VT 102990

TABLE OF CONTENTS

	Page
Introduction	0-3
1. Performance Based Vocational Teacher Education Model	1-1
1.1. Systems Approach Used in this Project	1-1
1.2. Statement of Objectives	1-2
1.3. Performance Based Teacher Education Literature	1-2
1.4. Vocational Teacher Needs	1-3
1.5. Delivery System	1-5
1.6. Evaluation of the Project	1-6
2. Field Testing	2-1
2.1. Teacher Education Institution	2-1
2.2. Institutions Served	2-1
2.3. Local Resource Persons	2-3
2.4. Students Served	2-4
3. Field Testing Results	3-1
3.1. Student Progress	3-1
3.2. Resource Persons' Inputs	3-4
3.3. Evaluation of Modules	3-5
3.4. Course Evaluation	3-6
4. Conclusions and Recommendations	4-1
4.1. Delivery System	4-1
4.2. University Activity Before the Course Starts	4-1
4.3. Starting the Course	4-2
4.4. Localization Problems	4-2
4.5. Students' Background and Occupation	4-3
4.6. Instructional Materials	4-3
4.7. Visitations and Consulting	4-4
4.8. Other Recommendations	4-4
Bibliography	5-1
Appendices	6-1

INTRODUCTION

The purpose of this project was to try out a new model for delivering teaching competency instruction to inexperienced vocational teachers. In recent years, they have been hired in large numbers by Vocational Schools which have started new programs or expanded the old ones. This rapid growth of vocational education has been based on community demand for occupationally qualified people.

In recent years, many books and articles have been written and quite a few research projects have been conducted in Performance (or Competency) Based Teacher Education. Many definitions of PBTE have been developed. One of them can be found [44] in Schmieder, 1973:

1. A system of teacher education which has its specific purpose the development of specifically described knowledge, skills, and behaviors that will enable a teacher to meet performance criteria for classroom teaching. Presumably, each competency attained by the preservice teacher is related to student learning and can be assessed by the following criteria of competence:

   a. knowledge criteria that assess the cognitive understandings of the teacher education student,
   b. performance criteria that assess specific teaching behaviors,
   c. product criteria that assess the teacher's ability to examine and assess the achievement of his or her pupils.

2. Any teacher education program having the following characteristics:

   a. Competencies (knowledge, skills, behaviors) to be demonstrated by the student which are:
      1) derived from explicit conceptions of teacher roles,
      2) stated so as to make possible assessment of a student's behavior in relation to specific competencies,
      3) made public in advance.
   b. Criteria (to be employed in assessing competencies) are:
      1) based upon, and in harmony with, specified competencies,
      2) explicit in stating expected levels of master under specific conditions,
      3) made public in advance.

c. Assessment of student's competency:
   1) uses his performance as the primary source of evidence;
   2) takes into account evidence of the student's knowledge relevant to planning for analyzing, interpreting, or evaluating situations or behavior; and
   3) strives for objectivity.
d. The student's rate of progress through the program is determined by demonstrated competency rather than by time or course completed.
e. The instructional program is intended to facilitate development and evaluation of the student's achievement of specified competencies [p. 52-53].

The delivery system tried out in this project followed the definition of PBTE stated above.

The project staff thanks the following institutions and groups which helped this research project to be realized:

Vocational Division, Minnesota State Department of Education,

External Advisory Committee,

Internal Advisory Committee,

Dakota County Area Vocational Technical Institute,

Oakland Vocational Center,

Anoka Area Vocational Technical Intitute

The thanks of the project staff go especially to the students-vocational teachers who willingly completed many questionnaires and evaluative forms for the purpose of this research.

PROJECT STAFF:

Jerome Moss, Jr. - Department of Vocational and Technical Education, Professor, Project Supervisor

R. Paul Marvin - Division of Agricultural Education, Professor, Project Director

David Bjorkquist - Divison of Industrial Education, Professor

Hana Tomasek - Division of Industrial Education, part-time Research Fellow

Ernie Larsen - Division of Agricultural Education, part-time Research Fellow

INTERNAL ADVISORY COMMITTEE:

John Van Ast - State Department of Education

Judy Lambrecht - Division of Business and Office Education

Roland Peterson - Division of Agricultural Education

George Copa - Research Coordinating Unit

Mary Klaurens - Division of Distributive Education

Helen Henrie - Division of Home Economics Education

Dave Pucel - Division of Industrial Education

EXTERNAL ADVISORY COMMITTEE:

John Van Ast	-	Program Planning & Development Division of Vocational Education Minnesota Department of Education 550 Cedar Street St. Paul, MN 55101
Gerhard Nelson	-	St. Paul AVTI 235 Marshall St. Paul, MN 55102
Dave Sprague	-	School District 287 1820 North Xenium Lane Plymouth, MN 55441
Ron McKeever	-	Dakota County Area Vocational Technical Institute P.O. Drawer K Rosemount, MN 55068
Gen Olson	-	School District 11 Vocational Center P.O. Box 191 Anoka, MN 55303
Richard Young	-	Area Vocational Center Cambridge, MN 55008
Bill Lundell	-	School Administration Building Minneapolis Public Schools 807 N.E. Broadway Minneapolis, MN 55413
Robert Jacobsen	-	Willmar Area Vocational Technical Institute Willmar, MN 55620
Chris A. Schlegel	-	School District 916 3300 Century Avenue North White Bear Lake, MN 55110

1. PERFORMANCE BASED VOCATIONAL TEACHER EDUCATION MODEL

In developing a model for the delivery of vocational teacher education, the project staff utilized several available resources. Vocational teacher competencies have been identified in several previous studies and the external and internal advisory committees assisted in the interpretation of the project objectives and identification of teacher needs and evaluation criteria. Project VITAL, conducted at Temple University, is an operational competency based vocational teacher education program which was observed by the project staff.

The terminology in this project was taken from the publication of the Teacher Education Developmental Service: Glossary of Terms, Competence-Based Teacher Education.

1.1. Systems Approach Used in This Project

A systems approach has been adopted by the project staff for structuring the delivery of vocational teacher education. This project in its complexity was considered as a hybrid system of people, technical means and communication channels with many flows of information and feedback connections. This system provides a means of examining vocational teacher education for the purpose of maximizing the improvement of teacher's instructional competencies.

At the beginning (before the system was actually implemented in vocational schools), the project staff carefully planned every step of the procedure. In view of the systems approach, the structure of the project can be illustrated in a block model in Fig. 1.1.

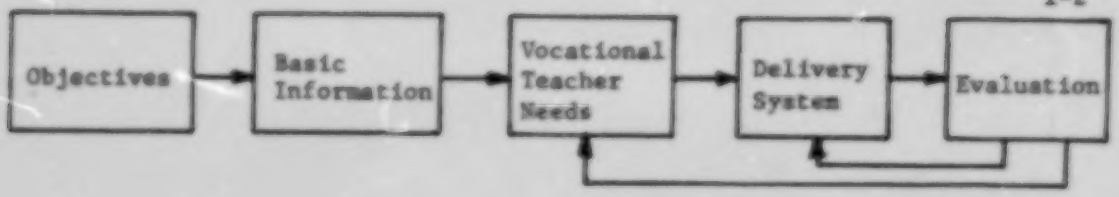


Fig. 1.1: The systems approach to the project

The following sections describe each block in more detail.

1.2. Statement of Objectives

The broad objective of the project was stated as follows:

The Department of Vocational Education of the University of Minnesota will provide special teacher education services to selected vocational programs in Minnesota.

This objective was further specified:

1. A course for beginning vocational teachers will be developed to help them achieve basic teaching competencies.
2. The course will be provided by an off-campus delivery system.
3. Competencies to be achieved in the course will be developed for the needs of post-secondary and secondary vocational teachers regardless of their occupations.
4. Instructional materials necessary for the course will be prepared.
5. a. Assessment criteria for student competency improvement will be worked out.
   b. An evaluation approach to the whole project will be established.

1.3. Performance Based Teacher Education Literature

Over 50 research reports, articles and books were searched in order to find different lists of competencies, their prioritization, kinds of delivery systems and other information related to performance based teacher

education and especially to vocational teachers' education (see Bibliography).

Also, other materials (learning packages, tapes, films and others) which could be eventually used by students, were searched.

1.4. Vocational Teacher Needs

A comparative method was used to compile a comprehensive list of the competencies identified in several previous studies. The following lists of competencies, prepared by different institutions were compared:

Department of Industrial Education, University of Minnesota (1973)

Department of Industrial Education, University of Wisconsin - Stout (1972)

Human Resources Research Organization, Texas (1973)

Center for Vocational and Technical Education, Ohio State University (1970)

Texas Education Agency (1972)

Cornell Institute for Research and Development in Occupational Education, State University of New York, Ithaca (1973)

United States Department of Health, Education and Welfare (year of publication is not given)

Department of Vocational and Applied Arts Education, Wayne State University (1972)

The list of competencies, developed by the Center for Vocational and Technical Education, Ohio State University was finally chosen as the single most complete list.

With the cooperation of the Internal and External Advisory Committees, the prioritization of competency categories (category is a group of related competencies) was done. From 10 categories, the following three were given the highest priorities in terms of the needs of vocational teachers:

1. Planning for Instruction
2. Execution of Instruction
3. Evaluation of Instruction

These three categories include 95 competencies (See Appendix 1). From these, the External and Internal Advisory Committees chose 38 most important competencies for beginning vocational teachers. These 38 competencies served as the original basis for planning the instruction which was provided for vocational teachers through this project.

Due to limitations in the time available within this project, it was necessary for the project staff to further reduce the number of competencies included. These reduced competencies are divided into two basic categories:

1. Planning of Instruction
2. Execution of Instruction.

The competencies to be accomplished by students in the course follow:

Category: Planning of Instruction

Competencies:

1. Formulate objectives for a course.
2. Select and develop instructional content for a course.
3. Organize the sequence of learning tasks.
4. Determine instructional units for a course.
5. Determine in-school learning experiences (classroom and/or lab).
6. Construct a lesson plan.
7. Plan the introduction and summary of a lesson.
8. Select teaching techniques and methods.
9. Select and develop instructional content for a lesson.
10. Determine instructional media and aids for a lesson.

Category: Execution of Instruction

Competencies:

11. Introduce a lesson.
12. Obtain a summary or closure for a lesson.
13. Employ the technique of oral questioning.
14. Reinforce learning.
15. Demonstrate a manipulative skill.
16. Present a concept or principle through a demonstration.
17. Present information by use of the problem-solving method.

1.5. Delivery System

An off-campus, self-pacing delivery system was suggested by the project staff. Students did not need go to the University campus and they studied at their own pace. This delivery system is of great advantage for students-beginning teachers with full time work loads.

The Vocational Education Course VoEd 5-100, Special Topics in Instruction (Performance-Based Education) was offered. The description of the course follows:

> This course is structured around the use of learning packages (modules) which are designed to permit individualized instructional pacing. The course will be conducted at your school.
>
> Following is the content of the course divided to six modules:
>
> Module No. 1 - Audio-visual equipment and materials
> Module No. 2 - Writing behaviorally-oriented objectives
> Module No. 3 - Overview of development and planning a course
> Module No. 4 - Construct a lesson plan
> Module No. 5 - Plan and execute an introduction and summary for a lesson
> Module No. 6 - Select and execute the different teaching strategies (conducted in group sessions)
>
> University resource people and resource people from your school will be available for consultation while you are enrolled in this course.

The delivery system was structured with three students-beginning teachers advised by a local resource person (the qualifications and role of the local resource person are described in Chapter 2).

One University resource person was assigned to work with one local resource person and his three students. Weekly visits with the students and the local resource person were made by the University resource person. The students were encouraged to call their local resource person and/or University resource person any time they needed help.

The task of the University professors was to supervise this system and to teach two group sessions in every school.

It was necessary to write specialized materials as learning packages (modules), matched with the outline of the course and with its delivery system. The modules developed e.g. by Ohio State University or other institutions were not available for this course.

Six modules which covered the content of this course were developed. Each module included an introduction to the module, performance objectives, references, equipment and materials needed to complete the module, directions related to what and how to study, resource information about the topic of the module, learning activities for student practice and test questions and checklists for student self-evaluation. At the end of every module, questions for the student's evaluation of the module were included.

1.6. Evaluation of the Project

Evaluation of this project was based on inputs from students, local and University resource persons and the project staff. The following factors were considered:

A. The students' evaluation of:

1. his/her own learning efforts (the self-evaluation is included in each module),

2. the delivery system,

3. the modules,

4. the local resource person,

5. the University resource person,

6. general aspects of the complete course.

B. The local and University resource persons' evaluation of:

1. students' learning efforts (the test is included in each module),

2. complete course in general based on continuous observation.

C. The project staff made observations of the project in progress.

2. FIELD TESTING

2.1. Teacher Education Institution

THE UNIVERSITY OF MINNESOTA SITUATION

The Vocational Department of the University of Minnesota has five Divisions, each with a curriculum leading to certification in the areas of Agriculture, Distributive Education, Trade and Industrial, Home Economics and Business Education.

Each curriculum contains credit courses providing instruction in all of the elements of teacher preparation. The content of the combined courses of each of the curricula indicates that nearly all of the identified competencies considered essential for teaching, are dealt with in some manner. Methods of instruction in these courses include lecture, discussion and student performance. In all cases, students meet in a classroom situation at specified times. Individualization is limited to the classroom organization.

2.2. Institutions Served

The participating schools were identified by the project staff with the assistance of the Vocational Division of the Minnesota State Department of Education. They were:

1. Dakota County Area Vocational-Technical Institute (Dakota County AVTI)
2. Oakland Vocational Center (Oakland V.C.)
3. Anoka Area Vocational-Technical Institute (Anoka AVTI)

At Dakota Co. AVTI and Oakland V.C., local resource persons were selected who met the qualifications identified by the project staff (fully certified

vocational instructor with several years of teaching experience). At Anoka AVTI, no local resource person was identified. The role of the local resource person was described to the selected resource persons by the project staff. They were also given a list of suggested equipment, materials, and books necessary to complete the course (see Appendix 2).

The project staff obtained information about local staff development plans in each of the participating schools. All of the schools were active in staff development although only one of them had a formalized plan. In this case, the plan was laid out for two years. The focus of the first year was on preparing the staff to identify content and structure it for instruction. During the second year staff competencies in the delivery of instruction will be developed. This staff development plan will include the use of resource persons from the State Department of Education, teacher education institutions, other AVTI's, as well as staff development personnel, audio-visual specialists and other faculty members from the local school. Since this school was in the curriculum development stage of its staff development, this project did not precisely fit their needs. Much of the instruction in this project concerned the development of instruction, but some of it dealt with the execution of instruction or the teaching/learning process.

There was a wide variety of local resources available in the participating schools to support staff, such as audio-visual specialists. In another school, there was a centralized library of 3000-4000 books. Of these, about 100 were related to the process of instruction. In addition, there were about 120 periodicals and 800 audio-visual materials. Video tape, audio tape, slide duplication, sound on slide and other audio-visual equipment was available. There was a librarian and audio-visual specialist to support staff members as well.

There was a problem in securing the specific books used as resources for the instruction conducted in this project. They were not immediately available for purchase at the beginning of the course and the existing libraries in the participating schools did not have the needed references.

2.3. Local Resource Persons

There were three local resource persons who participated in this project. They were selected from within the participating schools because of their responsibilities for staff development within their school. In agreeing to serve as resource persons for this project, each of these three individuals accepted these duties:

1. To provide the immediate, practical aid the teacher (or student) needs.
2. Must be available when the teacher needs aid (before school, after school, evenings, etc.).
3. Develop a good working relationship with the teacher.
4. To help the teacher gain the maximum amount from the material and learning experiences.
5. To encourage the teachers when they feel discouraged.
6. To assist the teacher with audio-visual materials and equipment (e.g. when the teacher requests help).
7. To participate in the assessment of a particular competency with the teacher and the University resource person.
8. To participate in the assessment of this entire program upon completion.
9. To work with University resource people in evaluation of participants' performance in each competency and in the entire program.

Each of the local resource persons was employed in a position in which he had staff development responsibilities. Master's degree and education toward doctor's degree in vocational education had been completed by each resource person. One individual had three years of secondary vocational

teaching experience while the others had four and seven years. Additional experience in education had been acquired by two of the three resource persons.

2.4. Students Served

Students who expressed an interest in the course were selected by their supervisors in cooperation with the local resource persons. All together, there were 12 students chosen, who completed registration forms. Of these, three were secondary and seven were post-secondary vocational teachers. Two others were not teaching, but were preparing for vocational teacher certification. The average teaching experience for the 12 students was 1.5 years. One student had 4 years of teaching experience. There were teachers from each of these vocational fields: Agriculture (1), Business and Office (1), Health Occupation (4), Home Economics (2), Trade and Industrial (3), and Distributive (1). A mean of 15.5 years of occupational employment had been completed by the 12 students with the range of experience from 3 to 28 years. All of the students were high school graduates and five had completed less than 2 years of college while four had completed more than 2 years of college. The age of the students ranged from 28 to 58 years with a mean of 38.5 years.

3. FIELD TESTING RESULTS

During the field testing data were gathered about several aspects of the program for the purpose of assessing outcomes and providing a basis for recommendations for future delivery of vocational teacher education services.

3.1. Student Progress

The progress of students was measured primarily according to the rate at which they accomplished the objectives in the learning modules. There were differing levels of achievement of the objectives by students, but each student performed each competency to a predetermined level before progressing to succeeding objectives. Fig. 3.1. is a flow chart indicating the progress of students relative to the total course.

There was a total of six modules of instruction in the course. The completion week for each module for each of the seven students is shown in Tab. 3.1. The average number of weeks required for completion of all six modules was 16.

Students estimated their level of proficiency for each of the competencies in the course prior to and after completion of each module. The six levels of proficiency used were:

5 - excellent

4 - very good

3 - good

2 - possible to teach, improvement necessary

1 - some

0 - none

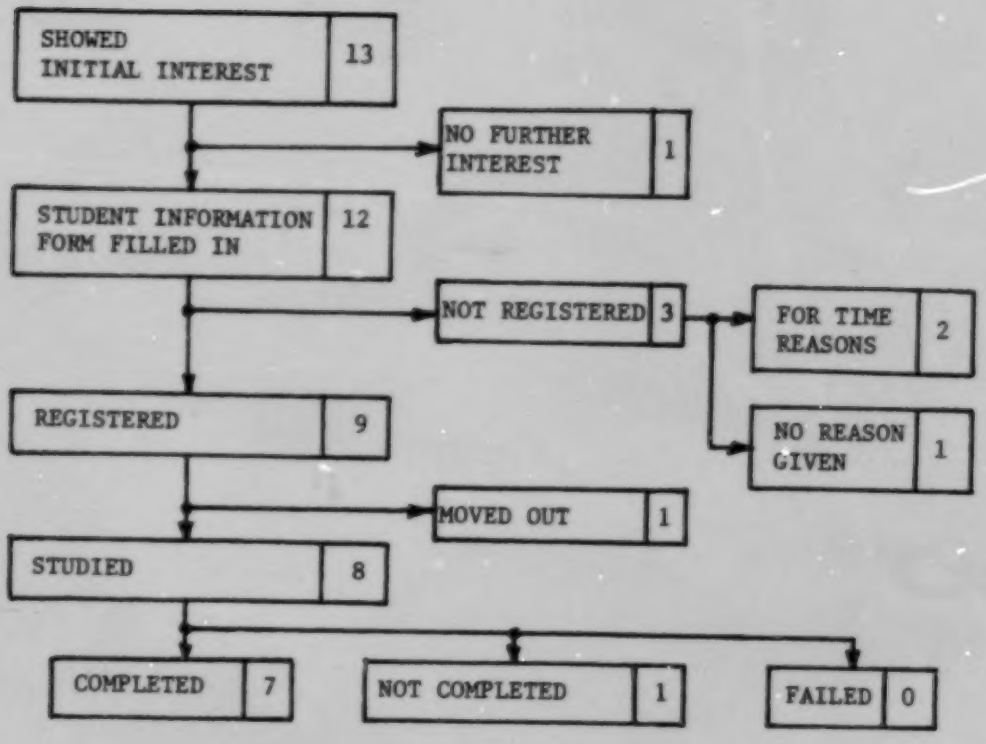


Fig. 3.1: Flow Chart of Student's Progress During the Course

Student	WEEK #																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1			1				2		6							3	4	5
2				1	2				6							3	4	5
3					1				6			2					3 4	5
4			1						6								2	3 4 5
5								1	2		6		3 4 5					
6								1	2		6		3 4 5					
7								1	2		6		3 4 5					

Tab. .1: Modules Completed During Weeks of Instruction (Numbers identify individual modules. Module 6 was presented in group sessions.)

Before studying the modules, the mean self-rating of all students on all modules which they began was "possible to teach, improvement necessary." After completion of these modules, the mean self-rating was "very good".

Students were also asked to estimate the amount of time required to complete each of the modules. The range and mean time required to complete each module are shown in Tab. 3.2.

Module #	1	2	3	4	5	6	Total
Time Range	2-4	0.5-5	6-20	1-5	1-5	3-4	0.5-20
Mean	3.43	2.64	10.86	3.21	2.36	3.57	
Total Mean							4.345

Tab. 3.2: Mean Time and Time Range Estimated for Completion of Each Module (in hours).

The progress of students within the instructional program is given perspective by examining the other time commitments of the students. According to self-reports, students enrolled in this instruction had mean time commitments of 50.5 hours per week including teaching, other job duties, public activities, enrollment in other courses, and other activities.

3.2. Resource Persons' Inputs

a. University Resource Persons

At the beginning of the project, the University resource persons (members of the Project Staff) were engaged in designing the course, as described in Chapter 1. This represented approximately 20 percent of professors' working time and 50 to 75 percent (part-time contracts) of regular working time for research fellows for a total of 6 to 8 months.

During the field testing, however, the professors were involved directly only in introductory lessons and in the teaching of module No. 6 (group sessions). These activities required approximately 42 hours for two of them, plus time necessary for preparing the lessons. Besides this, of course, the professors have been permanently involved in supervising the University research fellows and local resource persons, as well as in evaluating the progress of the course.

The University research fellows were instrumental throughout the field testing providing direct consulting help to the students and assisting local resource persons in solving problems.

This direct, every-week involvement was important to the success of the field testing program. The two of them spent a total of 160 hours directly in selected schools, an average of 10 hours per week. These figures do not include necessary driving time, which in geographical

conditions of the greater Minneapolis-St. Paul Metro Area represents about 2 hours for each visit (from and to the U of M campus).

b. Local Resource Persons

Local resource persons helped each student for an average of 2 hours weekly. Their help was available almost anytime, except for scheduled activities (school meetings, etc.).

3.3. Evaluation of Modules

The students were asked to evaluate the modules. A questionnaire developed by the Project Staff was enclosed in every module. The questions were answered by all seven students who successfully finished the course.

In general, the students were satisfied with the modules except for Module No. 3. This module dealt with the course introduction and the course development for group and individualized instruction. The content of this module was too difficult. This module is the only one (out of six) which consists of three parts (three "Learning Experiences"), and only this one was considered to be too difficult and too long. Two students stated it was not written clearly. The students' suggestion was to break this module into three independent modules. They also suggested more meetings and discussions with resource persons about the content of Module No. 3. It was the Project Staff intention to learn the acceptance of one module with three related parts. The other five modules (6th was executed in a group) were evaluated positively. Most students expressed that the modules were interesting to them, written clearly, of appropriate length, and that the content of modules was directed to the most important learning points. Most students expressed their appreciation of the recommended books, video tapes and other aids.

In this matter, however, some of them thought that the books did not help them too much. In some cases, the checklists were not considered helpful. All materials gathered from the students have been filed so the modules can be corrected accordingly.

The most important and positive conclusion is in answer to the question "Did you learn from this module what you had expected?" This question was answered "yes" in every module by all students except for one "no" in Module No. 3.

3.4. Course Evaluation

All data for the course evaluation were gathered from students by means of questionnaires, developed by the Project Staff. Further, more information was obtained from students and local resource persons in personal discussions.

Evaluation data and opinions can be divided into evaluation of:

a. course by students

b. local resource persons by students

c. University resource persons by students

d. course by local resource persons

Evaluation of the Course by Students

All seven students who successfully finished the course answered the questions related to the whole course evaluation. The questions asked and answers given are summarized below.

Q: Did you learn in the course the most important topics which you need immediately?
A: YES - 7, NO - 0, NOT SURE - 0.

Q: Which topics would you add to the course?
A: The suggested topics were: test preparation, grading scales (addition to Module 6), and lecturing in the front of real people. But no additions were suggested, if the course were intended exclusively for first-year teachers.

Q: Which topics would you omit in the course?
A: There was no suggestion presented.

Q: Why did you attend the course?

	A (YES):
1. Necessary for certification or recertification.	4
2. Opportunity for salary improvement.	-
3. Required by district, state, etc.	1
4. Personal choice.	4
5. Recommended by supervisor, administrator, etc.	6
6. Part of a degree program.	2
7. Other (specify)	1

The students answered "yes" to as many reasons as applied to them. The most frequent answer (six students) was that the course was recommended by a supervisor or administrator. In addition, some of them attended the course because of their personal choice and necessity for certification. For two students, the course was a part of their degree program. One student attended the course because it was required by a district.

Q: Was your participation in this course rewarding to you?
A: YES - 7, NO - 0, NOT SURE - 0.

Q: Have you used any information, knowledge, materials or skills acquired from the course to improve your performance (in the classroom) or your program?
A: Five students answered that they plan on it and two students had already used it.

Q: Would you recommend this course to your colleagues to help them improve themselves and their programs?
A: YES - 4, NO - 0, NOT SURE - 3.

Evaluation of Local Resource Persons by Students

Again, all seven students who successfully finished the course answered the questionnaire.

Q: Did your resource person help you while you were studying the course?
A: YES - 5, NO - 0, NOT MUCH - 2.

Q: Did you need your resource person's help?
A: YES - 5, NO - 0, NOT MUCH - 2.

Q: Was the relationship between you and your resource person good?
A: YES - 7, NO - 0, NOT SURE - 0.

Q: Did your resource person encourage your efforts?
A: YES - 7, NO - 0, NOT SURE - 0.

In their comments, two students expressed that it was difficult for them to meet with their local resource person because "they were not under one roof." Another student expressed the opinion that the local resource person should check briefly with students a couple times a week to see if everything is going O.K. In general, the students were satisfied with their local resource persons and appreciated their willingness to help them any time.

Evaluation of University Resource Persons by Students

Listed below are the questions and answers, comments and requirements by all seven successful students.

Q: Did the University resource person help you while you were studying the course?
A: YES - 6, NO - 0, NOT MUCH - 1.

Q: Did you need the University resource person's help?
A: YES - 6, NO - 0, NOT MUCH - 1.

Q: Was the relationship between you and the University resource person good?
A: YES - 7, NO - 0, NOT SURE - 0.

Q: Did the University resource person encourage your efforts?
A: YES - 6, NO - 0, NO OPINION - 1.

Q: If you were not successful in the assessment, did the University resource person help you identify your further learning needs?
A: YES - 4, NO - 0, NO OPINION - 3.

In their comments, the students appreciated the personality, patience and knowledge of their University resource persons. Some of them emphasized their ability to explain and answer any question clearly and simply and to motivate them. Generally, the direct consultations with University resource persons were classified as most helpful and beneficial in the whole course. Individualized instruction was considered by one student to be "superb".

Some students requested more firm scheduling of the course with obligatory deadlines for finishing each module, and one requested that a University resource person call him by phone twice a week to check how the study is going.

The University professors' approach to the students was appreciated by all of them. All students considered the group sessions led by University professors at the best ones.

Evaluation of the Course by Local Resource Persons

The local resource persons were asked to write an evaluation, which is summarized below.

Concept - The rationale behind a modular, self-paced, individualized teacher training concept was well received by all instructors. They regarded the course content as being valuable, but were more appreciative of the availability of resource persons and the self-pacing aspect.

Delivery System - The method of implementing this course certainly has the potential of being the accepted way of obtaining teacher certification credits, especially for out-state teachers and less than class size groups of teachers. The relationships which necessarily develop

between local resource persons and University personnel is a very healthy one for open and direct communications. The system also provides a less abrupt confrontation to University bureaucracy for the beginning teacher.

Effectiveness of Program - The total effectiveness of the program can only be evaluated after the instructors have had an opportunity to put their acquired knowledge into practice. From the reports of instructors, after a very brief exposure to the information, they agree unanimously as to the increased professional growth they anticipate from the program.

The local resource persons' recommendations for planning a similar program in the future were also issued in a written statement (4.8.).

4. CONCLUSIONS AND RECOMMENDATIONS

On the basis of the field testing the following conclusions and recommendations are presented for use in future planning of delivery systems for vocational teacher services:

4.1. Delivery System

The delivery system of the instruction:

a. should be performance-based,

b. can be a type of off-campus course study,

c. should be studied by self-pacing method by the help of special instructional materials, local and University resource persons,

d. should include some group sessions led by University professors.

4.2. University Activity Before the Course Starts

Several months before a course is offered by the University, it is necessary to:

a. assign professors who are interested and experienced in off-campus activities to be responsible for a course,

b. select University resource persons who are experienced teachers and able to advise in the solution of teaching problems related to the occupations of their students-vocational teachers,

c. organize and plan the course in time.

Before the beginning of the course, it is advisable to:

a. Arrange for a course at least two months in advance and let schools have time for selecting local resource persons and students for this course. The school should have enough time for ordering required books and other necessary resources which should be available before the course starts.

b. Make sure that the variety of subject content is broad enough to fit local staff development plans.

c. State the time limitations for the end of the course. Otherwise it could be prolongated to several months by students. Three months for the course will be necessary.

d. Arrange a session with local resource persons to discuss their roles in this particular delivery system. The resource persons should be kind of model teachers for students taking the course. The resource person should be released from his school duties for at least two hours per week per student.

4.3. Starting the Course

All students taking the course should attend an orientation session for the purpose of gathering student information and registration, and explanation of the delivery system. Students need intensive help at the beginning of the course (first two weeks) in order to get fully acquainted with the course, to develop motivation and start working at full rate. Otherwise, students can easily lose the first month without accomplishing anything.

Students should be encouraged to seek help if they have any problem. It is important in this teaching-learning situation to develop the trust of the students-teachers and their advisors. Success of this type of study depends on good relations very much (see evaluation in 3.4.).

4.4. Localization Problems

This delivery system appears to work best when students-teachers are working (teaching) in the same building as their local resource person. In this situation they can be easily supervised by a local resource person. Needed equipment, materials, and books should be easily obtainable in the building in which they teach. The situation is not easy when students and local resource persons are working in different schools even though in administrative unit, because they have to spend time driving to meet with local or University persons and to use needed aids.

4.5. Students' Background and Occupation

As it was tried out in this project, the content of the course and this delivery system worked quite well:

a. even for non-teachers who sought teaching certification,

b. for teachers in different occupational fields,

c. for teachers teaching in secondary and post-secondary vocational schools.

During the face-to-face student conferences with local or University resource persons, the occupational specializations of the teachers have to be realized and direct application to their current (or future) teaching programs should be emphasized.

4.6. Instructional Materials

The instructional materials should include learning packages (modules) with recommendation of books, tapes, video tapes, and films (if possible).

Modules should be written briefly, clearly and easy to read. It is recommended that modules have a one terminal objective (a module with one terminal objective may include several enabling objectives). As was found in Module No. 3 (see Appendix A3-3), the students were confused studying three learning experiences in one module.

The acceptance of the group sessions in this project suggests the inclusion of small group sessions in an individualized, self-paced course. From an instructional point of view, the best time for a group session is after every student has completed the self-pacing program, i.e. at the end of the course in order to summarize student accomplishment. However, the varying rates of completion by students of self-paced modules make it difficult to find a time which is equally desirable for all students.

4.7. Visitations and Consulting

Weekly visitations of students by University resource persons are necessary to solve student learning problems, answer questions and evaluate students at the end of every module. The evaluation can be done cooperatively with a local resource person. Each visit by a University resource person will average about one hour per student. It is recommended that a local resource person spend about two hours per week per student.

As shown in section 3.2., the average time spent by the local resource persons and the University resource persons was approximately three hours per week plus driving time of the University resource persons. Professors' time while leading the group sessions and their driving time should also be added. This is expensive compared to courses conducted by group teaching methods. The question is whether or not the learning results are better and the students need less time to accomplish the required competencies compared to results and time spent using a group teaching delivery system.

4.8. Other Recommendations

For an individualized self-paced delivery system of vocational teacher education to be most effective a commitment of time for a local resource person and instructional resources for the teacher engaged in the teacher education is required of the school employing the teacher.

Local resource persons' recommendations for planning a similar course:

1. Such a program should be scheduled closer to the beginning of a school year (October - February).
2. Some intermediate time guides should be stated to prevent too many stragglers.
3. The final module should be an accumulation of the other modules and, in fact, be the final evaluation of the program.

There is no substantial difference between recommendations and conclusions of local resource persons and Project Staff, except that the final module of this particular set of modules may need to be altered if the number of modules in a given set of modules is increased.

BIBLIOGRAPHY

[1] University of Wisconsin-Stout, M.S. degree program committee for Industrial Education. "First-, Second- and Third-Level Tasks Performed by Industrial Education Teachers (without regard to educational position)," 1972.

[2] Human Resources Research Organization, Western Division Texas. "A Model of the Functions of Master Instructor," 1973.

[3] The Ohio State University, The Center for Vocational and Technical Education. "A Model Curricula for Vocational and Technical Teacher Education - Teaching Career Analysis," 1970.
(Note: for discussion only)

[4] Pope, Billy N. (EPD Consortium D), et al, (submitted to Texas Educational Agency). "A Search for Common and Unique Teaching Skills and Knowledge in Occupational Education and Technology at the Secondary Level," 1972.

[5] Pope, Billy N. (EPD Consortium D), et al, (submitted to Texas Education Agency). "A Search for Common and Unique Teaching Skills and Knowledge in Occupational Education and Technology at the Secondary and Post-Secondary Level," 1972.

[6] Pope, Billy N. (EPD Consortium D), et al, (submitted to Texas Educational Agency). "A Search for Common and Unique Teaching Skills and Knowledge in Occupational Education and Technogy at the Post-Secondary Level," 1972.

[7] University of Minnesota, Dept. of Industrial Education. "Vocational Teacher Competencies, Inexperienced Teacher, Tentatively Arranged for Presentation of Pre-Service Vocational Teacher Training Class," 1973. (Note: for discussion only)

[8] University of Minnesota Bulletin 1974-76, College of Education, 1974.

[9] Andreyka, Robert E. and Shirley, Del. "Foundations for Vocational Teacher Education Curricula," The Ohio State University, Columbus, The Center for Vocational and Technical Education. Presentation at American Vocational Association Annual Convention, Chicago, Illinois, 1972.
(Note: Microfiche ED 070 871)

[10] Baird, Hugh and Belt, Dwayne. "Some Organizational Problems Encountered in Implementing Competency-Based Education," Presentation at the Annual Meeting of the American Educational Research Association, New Orleans, Louisiana, 1973.
(Note: Microfiche ED 084 221)

[11] Clark, Francis E. and Hamilton, James B. "Cooperative Development of Vocational Teacher Education Modules," The Ohio State University, Columbus, The Center for Vocational and Technical Education. Presentation at the American Vocational Annual Convention, Chicago, Illinois, 1972.
(Note: Microfiche ED 070 870)

[12] Cotrell, Calvin J., et al. "Model Curricula for Vocational and Technical Teacher Education, Report No. IV: A Foundation for Performance-Based Instruction, Final Report," The Ohio State University, Columbus, The Center for Vocational and Technical Education, 1972.
(Note: Microfiche ED 067 509)

[13] Houston, Robert W., et al. "Competency-Based Teacher Education. Progress, Problems and Prospects," The USA Library of Congress, Card Catalog No. 72-83692, 1972.

[14] Ely, Ron H. "Performance-Based Professional Education Inservice Needs of Secondary Level Occupational Teachers in New York State," State University of New York, Ithaca, Cornell Inst. for Research and Development in Occupational Education, 1973.
(Note: Microfiche ED 079 551)

[15] New Haven Education Improvement Center, Connecticut. "An Evaluation Instrument for a Competency-Based Teacher Education Program," 1973.
(Note: Microfiche ED 083-182)

[16] New Haven Education Improvement Center, Connecticut. "Performance-Based Teacher Education: Publications and Sources of Information for Educators," 1973.
(Note: Microfiche ED 083-181)

[17] Rose, Keith B., et al. "A Programmed Course for the Writing of Performance Objectives. A Constructed Response Linear Program," University of California Program Development Center. Phi Delta Kappa, Bloomington, Indiana. Commission on Educational Planning, 1972.
(Note: Microfiche ED 073-528)

[18] Tarr, Elvira R. "Some Philosophical Issues in Competency-Based Teacher Education," Presentation at Annual Meeting of American Educational Research Association, New Orleans, Louisiana, 1973.
(Note: Microfiche ED 076 667)

[19] Lawson, Tom E. "Designing Competency-Based Instruction," Journal of Industrial Teacher Education, Vol. 11, No. 4, 1974.

[20] Wayne State University, Detroit, Michigan. Dept. of Vocational and Applied Arts Education. "VAE Pre-Certification Teacher Education Program: Competencies and Performance Objectives. (Competency-Based Teacher Education Series No. 1)," 1972.
(Note: Microfiche ED 076 747)

[21] Cook, Fred S. "A Systems Approach to Vocational Teacher Education," Wayne State University, College of Education, Dept. of Vocational and Applied Arts Education, 1972.

[22] Wayne State University, Detroit, Michigan. Dept. of Vocational and Applied Arts Education. "A System Approach to Vocational Teacher Education. Progress Report, 1972-73," 1973. (Note: Microfiche ED 080-695)

[23] Houston, Robert W., et al. "Resources for Performance-Based Education," New York State Education Department, Albany, Division of Teacher Education and Certification, 1973. (Note: Microfiche ED 080-695)

[24] Gunderson, Donald O. "A Factor Analysis of Professional Education Competencies and Community College Instructors of Trade and Industrial Education," Oregon State University, 1971. (Note: Microfilm MF 000 293)

[25] University of Minnesota, Department of Educational Administration, College of Education. "A Plan for Competency-Based Training of Educational Administrators," 1974.

[26] McAshan, H. H. "The Goals Approach to Performance Objectives," University of North Florida, W. B. Saunders Co., Philadelphia, London, Toronto, 1974.

[27] Krathwohl, David R., et al. "Taxonomy of Educational Objectives. The Classification of Educational Goals." (Handbook II: Affective Domain), David McKay Co., Inc., New York, 1968.

[28] North Carolina State Department of Public Education, Occupational Research Unit. "Individualized Instruction in Occupational Education," 1974.

[29] Burger, Laura J. and Lambrecht, Judith L. "Handbook for Vocational Instructors Interested in Competency-Based Personalized Instruction," now in progress.

[30] Walsh, John P. "Teacher Competencies in Trade and Industrial Education," U.S. Department of Health, Education, and Welfare (Office of Education), OE-84006 Vocational Division Bulletin No. 285, Trade and Industrial Education Series No. 69 (year is not published).

[31] Cotrell, Calvin J., et al. "Model Curricula for Vocational and Technical Teacher Education: Report No. I. Performance Requirements for Teachers," The Ohio State University, The Center for Vocational and Technical Education, Columbus, Ohio, 1971.

[32] Cotrell, Calvin J., et al. "Model Curricula for Vocational and Technical Teacher Education: Report No. II. General Objectives - Set 1," The Ohio State University, The Center for Vocational and Technical Education, Columbus, Ohio, 1971.

[33] Cotrell, Calvin J., et al. "Model Curricula for Vocational and Technical Teacher Education: Report No. V. General Objectives - Set II," The Ohio State University, The Center for Vocational and Technical Education, Columbus, Ohio, 1972.

[34] DeVault, Vere M., et al. "Competency-Based Teacher Education: 1, Problems and Prospects for the Decades Ahead," McCuthan Publishing Corp., Berkeley, California, 1973.

[35] Cooper, James M., et al. "Competency-Based Teacher Education: 2, A System Approach to Program Design," McCuthan Publishing Corp., Berkeley, California, 1973.

[36] Hackett, Bessie. "Competencies for Occupational Teachers," Illinois State University, 1974. (Note: for discussion only)

[37] Lawson, Tom E. "A Performance-Based Instructional Theory," Journal of Industrial Teacher Education, Vol. 11, No. 3, 1974.

[38] Matteson, Harold R., et al. "Function-Task-Competency Approach to Curriculum Development in Vocational Education in Agriculture," Research Report No. 2, University of Wisconsin-Madison, College of Agricultural and Life Sciences, Department of Continuing and Vocational Education, 1974.

[39] University of Minnesota, Department of Vocational and Technical Education. "Selected terms used in VoEd 5300 - Philosophy and Practice of Vocational Education." Terms are from the American Vocational Association's publication: Vocational-Technical Terminology, 1970.

[40] Benson, J. M. et al. "The industrial education teacher's professional tasks," University of Wisconsin-Stout, 1974.

[41] Adamsky, R.A. "Module utilization in vocational teacher education at Temple University," Proceedings of the 7th Annual National Vocational Technical Teacher Education Seminar, 1973. (Note: Microfiche ED #089094 Book #004432)

[42] Bradley, C.H. "Getting practical, A VITAL Boost for Vocational Teacher Education," School Shop, Nov. 1974.

[43] Professional Sequence Guide. "Handbook of individualized instructional lessons for preservice secondary teachers," Department of Education, Illinois State University, Normal, Illinois.

[44] Schmieder, Allen. "Competency-Based Education: The State of the Scene." Washington, D.C., American Association of Colleges for Teacher Education, 1973.

[45] Teacher Education Developmental Service. "Glossary of Terms: Competence-Based Teacher Education." State University of New York at Albany, 1973.

Additional materials related to the subject from:

Eight Annual National Vocational Educational Personnel Development Seminar, October 28-31, 1974, Madison, Wisconsin.

[46] "Philosophical Bases, Trends, and Issues for In-Service Education," by Fred T. Wilhelms, The Center for Vocational Education, The Ohio State University.

[47] "Vocational Education and Requirements of In-Service Education for the 1980's," by Gordon I. Swanson, University of Minnesota.

[48] "Responsiblity and Accountability for In-Service Vocational Education Personnel Development," by Robert M. Worthington, Ph.D., Career Development Associates, Princeton, New Jersey.

[49] "In-Service Personnel Development Programs for Improving Technical Competency in Texas," by Hiram H. Goad, Coordinator, Industry/ Education Exchange.

[50] "In-Service Personnel Development Programs for Improving Technical Competence in Oklahoma, by Zed DeVaughan, Assistant Coordinator of EPDA Programs.

[51] "Some Inservice Personnel Development Patterns--New York State," by Robert J. Ullery, Industry-Education Coordinator, New York State Education Department, Albany, New York.

[52] "Progress and Promise for In-Service Performance-Based Personnel Development," by James W. Becket, Coordinator of Professional Development, Vocational Education Unit, California State Department of Education.

[53] "Competency-Based Personnel Certification Standards and In-Service Education," by L. O. Andrews, Professor Emeritus, The Ohio State University.

[54] "Competency/Performance-Based Personnel Certification Standards and In-Service Education," by J. Alden Vanderpool, Ed.D. Teacher Education Executive, California Teachers Association.

[55] "A Model to Evaluate In-Service Personnel Development in Vocational-Technical Education," by Dr. Ron Daugherty, Associate Director, The Center for Vocational Education.

[56] "Change in the Schools or The More Things Change the More they Seem to Remain the Same," by Arthur Blumberg, Professor of Education, Syracuse University.

[57] "Strategies of Personnel Development for Vocational Education in Canada," by Darrell R. LeBlanc, Chairman, Vocational Education Division, The University of New Brunswick.

APPENDICES

Most materials of informative and statistical character (data on students, evaluation results, etc.) are cited or mentioned throughout the text of the report.

Therefore, in this chapter appear only the most important materials:

A1 - Prioritization of Competencies

A2 - Suggested Equipment, Materials and Books

and complete texts of all six modules (A3-1 through A3-6).

However, all forms and other important documentation developed for the purpose of the course have been filed and are available to facilitate designing any similar course in the future.

A1

Name _____

Position _____

School _____

Prioritization of Competencies in

Vocational-Technical Teacher Education

Planning of Instruction	High Priority	Medium Priority	Low Priority
1. Organize an Advisory Committee.	_____	_____	_____
2. Consult the advisory committee for program planning information.	_____	_____	_____
3. Make an occupational analysis.	_____	_____	_____
4. Make a task or activity analysis.	_____	_____	_____
5. Determine student needs and goals.	_____	_____	_____
6. Formulate objectives for lessons, units and/or courses.	_____	_____	_____
7. Select and develop instructional content for a course.	_____	_____	_____
8. Select and develop instructional content for a lesson.	_____	_____	_____
9. Determine in-school learning experiences (classroom and/or lab).	_____	_____	_____
10. Select teaching techniques and methods.	_____	_____	_____
11. Select tools and equipment.	_____	_____	_____
12. Determine instructional media and aids.	_____	_____	_____
13. Organize the sequence of learning tasks.	_____	_____	_____
14. Determine instructional units.	_____	_____	_____
15. Construct a lesson plan.	_____	_____	_____
16. Plan the introduction of a lesson.	_____	_____	_____

Planning of Instruction	High Priority	Medium Priority	Low Priority
17. Develop instructional material (information, sheets, transparencies, bulletin board materials).	_____	_____	_____
18. Identify out-of-school learning experiences.	_____	_____	_____
19. Determine need for and identify resource persons.	_____	_____	_____
20. Determine appropriate library resources.	_____	_____	_____
21. Develop a system for recording and filing subject matter information.	_____	_____	_____
22. Analyze skills (operations, procedures) relevant to course planning.	_____	_____	_____

Execution of Instruction	High Priority	Medium Priority	Low Priority
23. Introduce a lesson.			
24. Direct a group discussion.			
25. Conduct a field trip.			
26. Direct a student manipulative skill demonstration.			
27. Direct role playing.			
28. Demonstrate a manipulative skill.			
29. Present a concept or principle through a demonstration.			
30. Give a lecture.			
31. Give an illustrated talk.			
32. Moderate a panel discussion.			
33. Present a lesson by the developmental method.			
34. Employ the technique of oral questioning.			
35. Recognize, interpret and utilize student actions and behavior (cues).			
36. Reinforce learning.			
37. Present study techniques.			
38. Develop standards for student attainment.			
39. Obtain closure for a lesson.			
40. Give an assignment for outside work.			
41. Present information with the assistance of a resource person.			
42. Reproduce instructional material with a spirit duplicator.			
43. Reproduce instructional material with a mimeograph machine.			

Execution of Instruction	High Priority	Medium Priority	Low Priority
44. Reproduce instructional (hard copy and transparency) material with a thermo or photo copier (3M, xerox).	_____	_____	_____
45. Set up display materials for instructional purposes.	_____	_____	_____
46. Present a lesson with overhead projector and/or opaque projector.	_____	_____	_____
47. Present an illustrated talk with 35 mm film strip or slides.	_____	_____	_____
48. Present a lesson with silent or sound motion picture film.	_____	_____	_____
49. Present a lesson with 8mm single concept film (individualized instruction).	_____	_____	_____
50. Present a lesson with videotape recordings.	_____	_____	_____
51. Present a lesson with audio tape, disc recording or radio receiver as resource.	_____	_____	_____
52. Direct programmed instruction (teaching machine or text.	_____	_____	_____
53. Present a lesson with closed circuit TV.	_____	_____	_____
54. Present a lesson with the aid of a flannel board and/or flip chart.	_____	_____	_____
55. Present a lesson with the aid of a chalk board.	_____	_____	_____
56. Present a lesson using a prepared skit (standardized, teacher or pupil written).	_____	_____	_____
57. Direct student laboratory experiences.	_____	_____	_____
58. Conduct visits to the student's home for instructional purposes.	_____	_____	_____
59. Engage one's self in role playing.	_____	_____	_____
60. Present information using authentic models, materials and equipment.	_____	_____	_____
61. Present information through team teaching.	_____	_____	_____

Execution of Instruction	High Priority	Medium Priority	Low Priority
62. Present information with exhibits or displays.			
63. Present information using analogies.			
64. Provide individualized instruction for students.			
65. Draw upon student experience in presenting instruction.			
66. Supervise student planning and presentation of instructional information.			
67. Orient students to the instructional phase of the course or program.			
68. Present information by the use of the problem solving method.			
69. Present information by the use of simulated experiences.			
70. Present information by the use of the project method.			
71. Present information by the use of the case study method.			
72. Utilize unplanned classroom or shop incident as a basis for presenting related information.			

Evaluation of Instruction	High Priority	Medium Priority	Low Priority
73. Evaluate text and reference materials to meet course objectives.	_____	_____	_____
74. Establish the evaluative criteria for lessons, units or courses.	_____	_____	_____
75. Select measures appropriate to the evaluative criteria.	_____	_____	_____
76. Formulate essay test questions.	_____	_____	_____
77. Formulate true-false test questions.	_____	_____	_____
78. Formulate completion test items.	_____	_____	_____
79. Formulate matching test items.	_____	_____	_____
80. Devise laboratory performance tests.	_____	_____	_____
81. Administer tests.	_____	_____	_____
82. Formulate a system of grading consistent with school policy.	_____	_____	_____
83. Direct student self-evaluations.	_____	_____	_____
84. Evaluate student's progress in class, home and laboratory assignments.	_____	_____	_____
85. Evaluate one's own techniques and methods of teaching.	_____	_____	_____
86. Devise case-study problems.	_____	_____	_____
87. Interpret evaluation data for students and for parents.	_____	_____	_____
88. Formulate multiple-choice questions.	_____	_____	_____
89. Establish criteria and methods for classroom or shop-laboratory performance.	_____	_____	_____
90. Determine if evaluative criteria exists.	_____	_____	_____

Evaluation of Instruction	High Priority	Medium Priority	Low Priority
91. Evaluate available standardized tests.	_____	_____	_____
92. Establish criteria for student self-evaluation.	_____	_____	_____
93. Evaluate student performance with standardized tests.	_____	_____	_____
94. Evaluate classroom facilities and equipment.	_____	_____	_____
95. Base student performance standards on available equipment and supplies.	_____	_____	_____

A2

Suggested Equipment and Materials Needed to Complete the Course

1. Overhead projector
   Opaque projector
   8mm and 16 mm film projector
   Slide projector
   Video tape playback and recording equipment
   Microfilm reader
   Filmstrip projector
   Tape recorder
   Models (e.g. engine, etc. specified by the occupation of our students)
   Flat pictures (specified by the occupation of our students)
   Materials like
   slides, blank tapes, recorded tapes, filmloop, microfilms, transparencies, etc. to be used for the explanation to our students of how to operate the equipment above.

2. Video tapes: "Designing a Vocational Course"
   "Planning a Vocational Course"
   "Execution of Instruction"

3. Dale, E. Audiovisual Methods in Teaching. (3rd ed.) New York et al: The Dryden Press, 1969.

   Mager. R. F. and Beach, Jr., K. M. Developing Vocational Instruction. Palo Alto, California: Fearon Publishers, 1967.

   Mager, R. Developing Attitude Toward Learning. Palo Alto, California: Fearon Publishers, 1968.

   Mager, R. Preparing Instructional Objectives. Palo Alto, California, Fearon Publishers, 1962.

   Pucel, D., and Knaak, W. Individualizing Vocational and Technical Instruction. Columbus, Ohio: Charles E. Merrill Publishing Co., 1975.

   Frantz, Jr., N. (Ed.) Individualized Instructional Systems for Vocational and Technical Education: A Collection of Readings. Athens, Georgia: Vocational Instructional Systems, 1974.

AUDIO-VISUAL EQUIPMENT AND MATERIALS

Module No. 1

Department of Vocational and Technical Education
University of Minnesota

March 1975

Table of Contents

Page

Title Page 1

Introduction 2

Performance Objectives 3

References, Equipment and Materials Needed to Complete This Module 4

Learning Experience - Performance Objective and Directions 5

Supplements

Learning Experience - Information Sheet 6

Learning Experience - Learning Activities 9

Learning Experience - Test 10

Learning Experience - Checklist 11

Module No. 1 - Teacher's Evaluation 12

Module No. 1 - Resource Material 15

Module No. 1 - Title Page

Audio-Visual Equipment and Materials

Prerequisites: None

Directions:

1. a. Read the Introduction on p. 2.

   b. Read the Performance Objectives on p. 3.

2. If you think you are prepared for the assessment without studying this module, see p. 10 for the test and p. 11 for self-evaluation.

3. If you have successfully completed the test and self-evaluation, proceed to the next module.

4. If you were not successful or if you choose not to be assessed now, proceed with this module.

   a. Read the References listed on p. 4.

   b. Read the Learning Experience on p. 5.

Note: Your resource person is available to help you while you are studying this module.

Introduction

Audio-visual equipment and materials are needed to assist students in vocational education learning experiences. Vocational instructors need to know what equipment and materials are available and how to use these resources advantageously.

Your school has invested time and money in audio-visual equipment and materials and you should spend some time in becoming familiar with these resources. You will become confident and proficient in your ability to operate equipment and help develop materials as a result of your experiences. You will learn to use the resources which your school has made available within its limitations (money, personnel, time, etc.) and you should learn to plan your instructional activities within these limitations.

This module will be important to you as you progress through the other modules in this teacher-education program. Other modules will require the use of audio-visual equipment for their successful completion.

Performance Objectives

Upon completion of this module, the terminal performance expected is expressed in the

Terminal Objective:

> In your occupational specialty you will select and use the audio-visual equipment and materials necessary to assist you and the students in accomplishing the learning objectives of your program.

The performance expected as a terminal objective is further clarified in

Enabling Objectives:

1. Develop an operational competence in the use of A-V equipment:

   a. 16 mm projector.
   b. Slide projector.
   c. Filmstrip projector.
   d. Opaque projector.
   e. Overhead projector.

2. Establish and maintain communication with the A-V department in your school.

3. Evaluate audio-visual equipment and materials you are now using to determine their effectiveness.

References, Equipment and Materials Needed
to Complete This Module

1. Mager, R. and Beach, K. M. Jr. Developing Vocational Instruction. Belmont, California: Fearon Publishers, 1967.

2. Dale, E. Audio-Visual Methods in Teaching. (3rd ed.) New York: The Dryden Press, 1969.

3. Resource material attached to this module:

   a. Guide for evaluating projection equipment and materials.
   b. Guide for operating projection equipment.
   c. University of Minnesota Communication Bulletins and Information Service.

4. Equipment Needed:

   a. 16mm projector and film.
   b. Carousel slide projector with tray and slides.
   c. Filmstrip projector and filmstrip.
   d. Opaque projector.
   e. Overhead projector and transparency.
   f. Screen.

Learning Experience - Performance Objective and Directions

Objective

In your occupational specialty you will select and use the audio-visual equipment and material necessary to assist you and the students in accomplishing the learning objectives of your program.

Read:
1. Mager, R. and Beach, K. M. Jr. Developing Vocational Instruction, (reference No. 1, p. 75-83).
2. Learning Experience - Information Sheet on p. 6.
3. Resource material attached to this module, (reference No. 3, p. 15).
4. Dale, E. Audio-Visual Methods in Teaching, (reference No. 2, pp. 107-111).

Practice: Follow instructions in Learning Activities on p. 9.

Evaluate:
1. Complete the self-administered test on p. 10.
2. Do the practical performance test on p. 10.
3. Complete the checklist on p. 11.
4. For your evaluation discuss your written answers and your performance with your resource person.
5. If you were successful in your evaluation, proceed to the next module.

Supplements

Module No. 1: Audio-Visual Equipment and Materials

Learning Experience - Information Sheet

The information contained in this sheet and in the attached material on p. 15 will assist you in the selection, use, and evaluation of the audio-visual equipment and materials that you should use in your instruction.

Selection of Audio-Visual Equipment and Materials

According to Dale's Audio-Visual Methods in Teaching (1969), "Cone of Experience" (modified and diagrammed on p. 8) there exists a wide span of available experiences you should consider when selecting instructional media. In selecting audio-visual equipment and material, you should carefully examine the learning objectives you are attempting to accomplish and ask yourself the question, "Will this equipment and material make it easier for my students to learn the behavior specified in the objective?" For example, a motion picture will probably not help a student to learn how to play a piano. On the other hand, an audio recording of a piano performance may help the student to learn some aspects of piano playing.

Use of the Selected Equipment and Materials

Once you have selected equipment and materials your next step is the effective use of the medium. Media selected or produced with no specific purpose identified will add little to the teaching-learning activity.

Successful use of media depends upon carefully planned pre and post-activities. Prior to using the media you should prepare yourself by previewing, reading, listening and making notes on materials to be presented. You should prepare your students by:

1. Stating the purpose of materials you are using.
2. Explaining the relationship of these materials to past experiences, students' needs, etc.

3. Giving the students specific ideas, skills, techniques, etc. to watch or listen for.

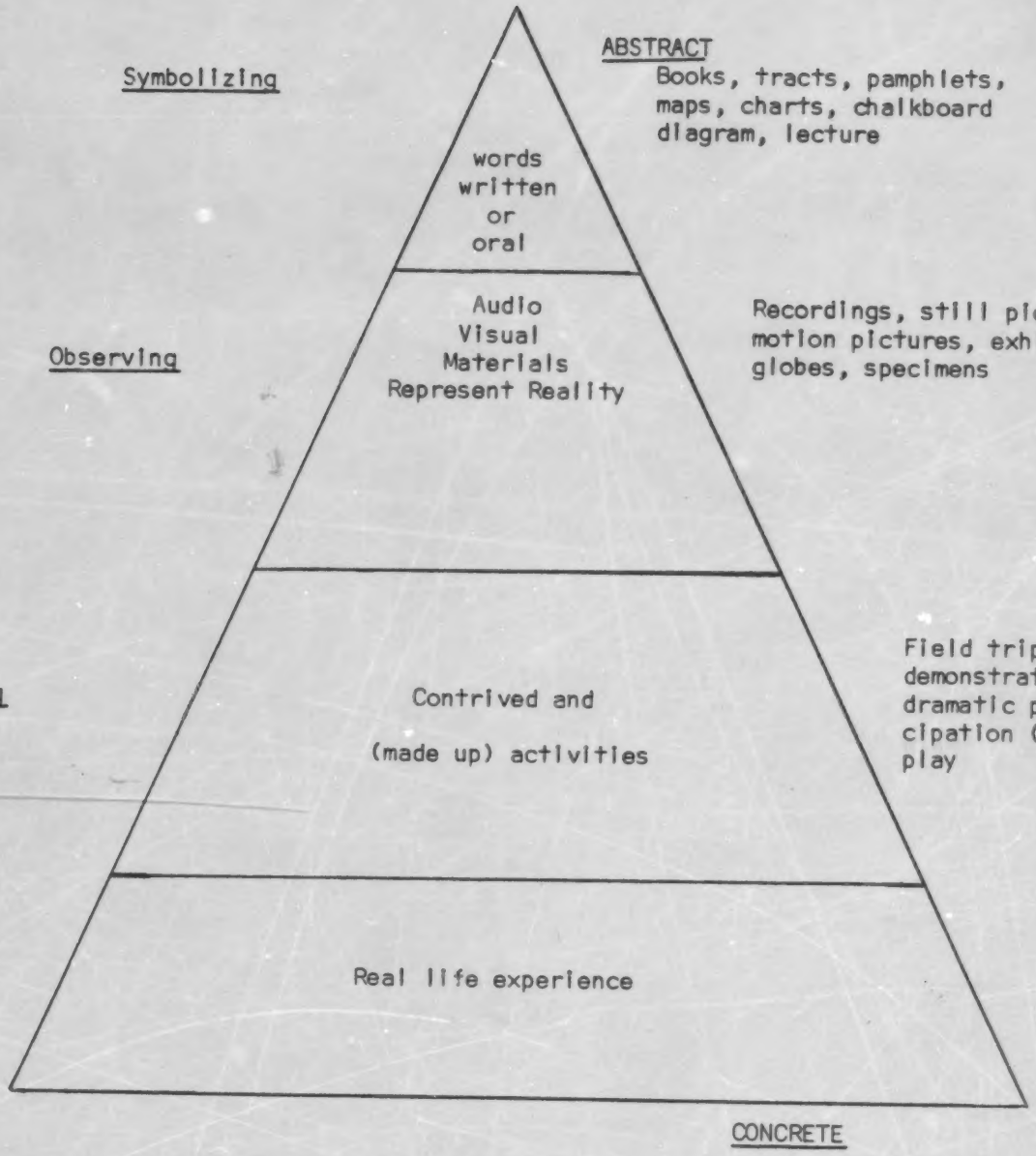
Following the use of materials, you might emphasize a particular point or evaluate the students' comprehension of materials. You could also have small group discussion, solve problems requiring transfer of concepts presented or you could have students demonstrate skills or procedures presented. You should always use some follow-up activities to evaluate the effectiveness of the media.

Conclusion

A great deal of research has been conducted to determine the processes by which people learn and the factors by which they retain what they have learned. The implications of these studies for you as a vocational educator are as follows:

1. Good instruction requires the use of a variety of materials and methods.
2. To maximize learning you must properly involve students before, during, and after the presentation of materials.
3. You are responsible for preparing yourself, the equipment and materials, your classroom or lab, presentation of materials, and follow-up activities for your instruction.
4. You should make a personal evaluation of all audio-visual equipment and materials that you present to students.

Many commercial sources can provide good audio-visual materials. Your creativity and the capability of the audio-visual department in your school should be utilized to produce those materials you are not able to secure.



CONE OF EXPERIENCE[1]

[1]Dale, E. Audiovisual Methods in Teaching. (3rd ed.) New York: The Dryden Press, 1969. "Cone of experience" has been modified to assist the vocational educator in understanding the interrelationship of materials and experiences in the learning process.

Learning Experience - Learning Activities

1. After spending some time studying this module, you should be able to evaluate the audio-visual materials you are using.

   a. Take a book or some duplicated materials you are presently using and compare them with the criteria contained in this module (attached resource material on p. 15). Put your evaluation of their contribution to your instruction on paper and discuss this with your resource person.

   b. Select two other audio-visual materials (not books or duplicated materials) you are using and compare them with the criteria contained in this module (attached resource material on p. 15). Write your evaluation on paper and discuss it with your resource person.

2. The use of many of the audio-visual materials requires the operation of equipment. This module contains the description of operating procedures and operational steps which you can use while practicing the operation of equipment (attached resource material on p. 15).

   a. You should practice the proper set up, operation and put-away of the following equipment:

      a. 16 mm movie projector.
      b. 2" x 2" slide projector.
      c. Filmstrip projector
      d. Opaque projector.
      e. Overhead projector.

Note: Your resource person will be available to help you. In addition you could request some help from your audio-visual department in your school.

Learning Experience - Test

Answer in brief written form test item No. 1.

Perform test item no. 2.

Test items:

1. Describe the criteria that would be used to select the appropriate audio-visual equipment and materials.

2. Demonstrate to your resource person the proper set-up, operation and put-away of the following equipment:

   a. 16 mm movie projector.
   b. 2" x 2" slide projector.
   c. Filmstrip projector.
   d. Opaque projector.
   e. Overhead projector.

After you have finished this test and the checklist on p. 11, discuss your answers and performance with your resource person.

Learning Experience - Checklist

Directions: You will use this checklist for your own evaluation. Please answer the following questions by circling one of three possible responses:

1. In selecting audio-visual equipment and materials are you able to evaluate:

a. propriaty of them?	yes	not certain	no
b. quality of them?	yes	not certain	no
c. their advantages?	yes	not certain	no
d. their disadvantages?	yes	not certain	no

2. After completing this module can you set up, operate and put away (without damage to material or projectors) the:

a. 16 mm projector?	yes	not certain	no
b. slide projector?	yes	not certain	no
c. filmstrip projector?	yes	not certain	no
d. opaque projector?	yes	not certain	no
e. overhead projector?	yes	not certain	no

Level of Acceptance:

If you answered either no or not certain to any question above, you will decide cooperatively with your resource person what part of this module you should study again.

Module No. 1 - Teacher's Evaluation

Teacher's evaluation of the learning process offered in this module.

Dear Colleague:

We would like to have some of your impressions of this module. We need these impressions for the evaluation of our program which you are now studying.

Would you, please, answer the following questions by circling one of three possible responses? Thank you for helping us.

The Program Authors

Evaluation of This Module

Questions			
Was this module interesting to you?	yes	not much	no
Was this module written clearly?	yes	not much	no
Was this module too short?	yes	not much	no
Was this module too long?	yes	not much	no
Was this module directed to the most important learning points only?	yes	not much	no
Did you understand the objectives of this module?	yes	not much	no
Did the books and/or articles recommended in this module			
a. relate to the content of this module?	yes	not much	no
b. help you in the achievement of objectives?	yes	not much	no
Did the video tapes, tapes and/or other aids recommended in this module			
a. relate to the content of this module?	yes	not much	no
b. help you in the achievement of objectives?	yes	not much	no
Did the learning activities			
a. relate to the content of this module?	yes	not much	no
b. help you in the achievement of objectives?	yes	not much	no
Were the test and checklist items			
a. worded clearly?	yes	not much	no
b. concentrated to the most important points of your learning?	yes	not much	no
Did the checklist help you in your evaluation?	yes	not much	no
Did you learn from this module what you had expected?	yes	not much	no

Your special comments:

What do you think should be improved in this module?

Module No. 1 ~ Resource Material

University of Minnesota Communication
Bulletins and Information Service

University of Minnesota
Institute of Agriculture

INFORMATION SERVICE SERIES NO. 20

Visualizing With Graphs

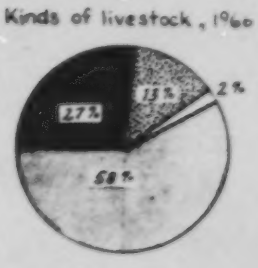
GERALD R. McKAY and JOHN J. FUCHS
Department of Information and Agricultural Journalism

One picture isn't always "worth a thousand words." But one good picture, properly used, can make clear a point that readers otherwise might miss.

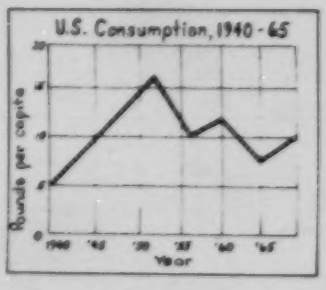
A graph is simply a pictorial device to help visualize an idea. One well conceived, well prepared graph can be worth many words of explanation. Moreover, there are several types of graphs you can use effectively.

Graphs are charts of a special kind. Poor graphs distort, confuse, or obscure; good ones are self-explanatory. Graphs consist of lines or drawings (sometimes even photographs) or a combination of the two used to present information. Graphs can be used in many ways--as part of a chart, in slides or motion pictures, to help illustrate a publication, or as props on a television show. Whatever their use, the purpose of graphs is the same--to help tell a story that is difficult to tell with words alone.

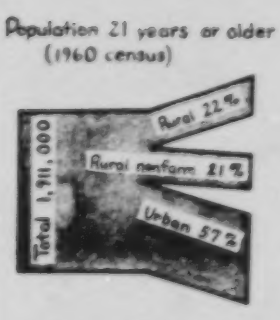
The most common kinds of graphs are: single bar and multiple bar graphs (used horizontally or vertically); circle graphs (the familiar pie charts); line graphs; cosmographs; and pictorial graphs (pictographs).



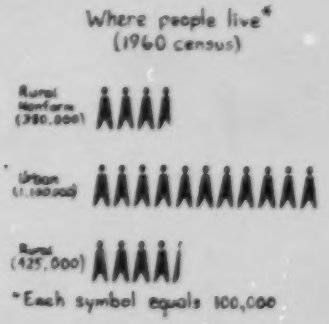
Circle graph



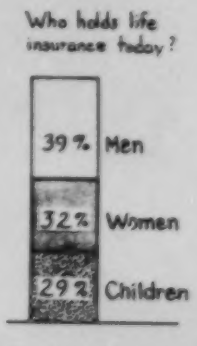
Line graph



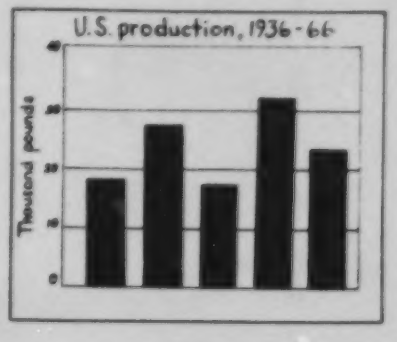
Cosmograph



Pictograph



Single bar graph



Multiple bar graph

PRINCIPLES OF GRAPHIC APPROACH

Keep these four principles in mind when you visualize with graphs:

- You can present graphically any material that is quantitative or factual.
- You must have your data selected and at hand before you start planning the graph.
- You should write a descriptive paragraph before you lay out the graph. Writing the paragraph will help you organize in your own mind the idea you want to visualize.
- You can tell only one story at a time. Try to tell it simply and make the graph interesting to look at.

Also remember that bar and circle graphs generally are more easily understood than line graphs. And pictographs generally are more easily understood than graphs with only lines or numbers.

WHICH TYPE OF GRAPH IS BEST?

The type of graph you should use depends on the kind of story you expect your graph to tell and the information you're visualizing. Here are some general tips on choosing appropriate graphs.

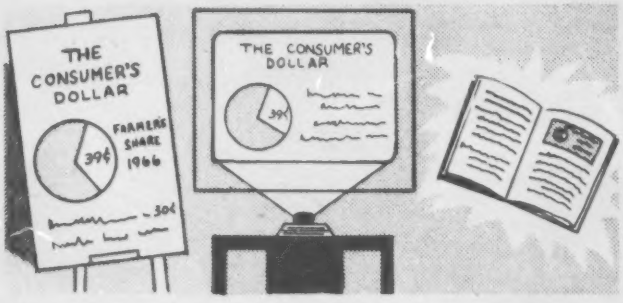
- To show trends over a period of time or to show frequencies (growth, change, or cycles), use a line graph.
- To show simple or multiple comparisons and some kinds of trends and frequencies, use a bar graph.
- To show the relation of a whole to its parts or to show breakdowns, use either a circle graph

(pie chart) or a cosmograph.

- To show simple comparisons between items that lend themselves to pictorial treatment (manpower, transportation, buildings, money, grain, etc.), use a pictograph.

PLANNING EFFECTIVE GRAPHS

As with any other visual teaching device, how you intend to use a graph will affect your planning and preparation. With careful planning, you can use the same graph in several ways.



For example, a multicolor graph designed for a poster may make an effective color slide, photographed just as it is. Or the same graph in one color may make a useful black and white slide that can be used as engraving copy for an illustration in a printed publication. Remember that original graphs usually must be reduced for slide or publication use, and consider that fact in your planning.

Keep alternate uses in mind when you portray an idea graphically. But always consider your primary use first. Proper preparation for your main purpose may make any alternate use impractical. Don't sacrifice effective presentation just so you can produce a multipurpose graph.

Here are some suggestions for planning graphs for any purpose:

- Use human interest captions that answer the questions: who? what? why? when? where?

- Think "pictorially" when you plan a graph.

- Try several solutions to a graphic problem to see which tells the story most clearly and effectively.

- After laying out a graph, cover up all descriptive material and see if the symbols still tell your story.

PREPARATION AND USE

In general, the rules for preparing a graph are the same as those for preparing a poster. Rough out your work in pencil first. Keep good balance; don't crowd. Avoid colors that clash. Finish lettering neatly with a speedball pen (large sizes only), showcard brushes, or felt-tip pens. You can use colored gummed tape to make bar or circle graphs.

For Classroom or Meeting Use--Graphs for these purposes usually are part of a chart. Keep them as simple as possible. Make letters and numbers large enough so people in the back of the room can read them easily. For example, if the back row is 25 feet away, your letters should be at least 1 inch high. Use mostly lower case letters.

For Publications--If at all possible, consult your editor before you plan graphs. He can explain mechanical limitations such as whether or not you can use color and he may be able to give you some timesaving hints. For example: he may be able to have graph information set in type so you won't have to have it handlettered; he may suggest that you use Zip-a-tone for indicating different items in a graph; and he can tell you what printed symbols are available for use in pictographs.

Keep in mind: (1) Graphs seldom are printed original size in bulletins or periodocals. Usually, they must be reduced to fit existing page or column size. All lines and letters also will be reduced, so make them large, clear, and legible enough so they can be read easily after the graph is reduced. (2) Precise variations such as points on a mathematically plotted curve can only be approximated on a graph. (3) Light blue guidelines can be filtered out by the engraver's camera. (4) You should give an artist or draftsman a detailed sketch and a clear explanation of what the graph should show. The better your sketch, the more satisfactory the printed result will be.

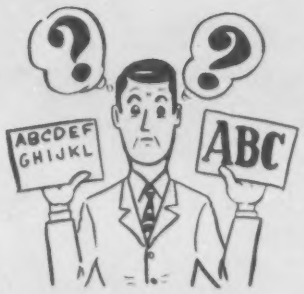
For 2-by 2-inch Slides--Make the vertical to horizontal ratio of your graphs two to three. Use a simple lettering style. Show only one idea on a graph. Use colored gummed tape in preparing graphs.

For TV and Motion Pictures--Use a three to four ratio of vertical to horizontal dimension in your graphs. Keep them simple, using as few lines and words as possible. Use a moving part to show change or comparison. Bar or circle graphs with movable parts or animated line graphs are good. Use color when the end product will be in color. Always use materials with matte (dull) finishes rather than those with glossy ones.

The information given herein is supplied with the understanding that no discrimination is intended and no endorsement is implied. 1M--7-66

How Effective Are Your Visuals?

GERALD R. McKAY AND RAYMOND WOLF



Do your visuals actually help you communicate at meetings, at demonstrations, or on TV? Do you get your money's worth? Psychologists have suggested tests to apply as you plan, prepare, and use visuals. Affecting the success of your visuals are these factors:

- Appearance - visibility, structure, clarity, and appeal
- Accuracy - fidelity, validity, and credibility
- Approach - tactics
- Technique
- Economy

APPEARANCE-VISIBILITY

Of course, a visual must be seen. So consider legibility, relative brightness, and color. To evaluate the visibility of your visual, view it under similar conditions to the actual viewing situation.

Legibility, the ease with which you can see a visual, depends on its size, spacing, and weight of line. Plan the size so that the entire audience can see your material. Make letters at least 1 inch in height for every 25 feet of distance to the farthest viewer.

Spacing also affects legibility: lines too close together are hard to read. Have line spacing about 1½ times the height of letters. You can space letters within a word more effectively with your eye than with a ruler because letters differ in width and shape.

Make the width or weight of lines in letters, sketches, or diagrams neither too thin nor too heavy.

Style of letters also affects ease of reading. Plain gothic letters (without projecting parts) are simple to make, catch the eye quickly, and are easy to read when bold. Avoid a very fancy or arty style.

E E

Lower case letters can be read faster than upper case. Nevertheless, use capital letters for emphasis and variety.

Relative brightness or graduations of light in your visuals should be within average limits of easy viewing. Avoid extremes between light and dark areas. But be sure that there is enough contrast for the existing room light, or your visuals will look flat and be hard to see.

Black and white line drawings provide a maximum of contrast on charts or projected slides. Photographs, especially those in color, have less contrast and require more light. When projecting photographs on a screen, you will need a darkened room. By choosing the correct size projector lamp or by adjusting room light, you have some control over brightness.

Color variety can place emphasis, give continuity, show relationships, utilize attitudes and experiences, and attract attention. For example, warm colors, particularly browns, are effective in presenting harvest themes. To show parallelism in subject matter, you can use shades of one color. The human eye generally can distinguish about 150 gradations of color or hue.

APPEARANCE-STRUCTURE

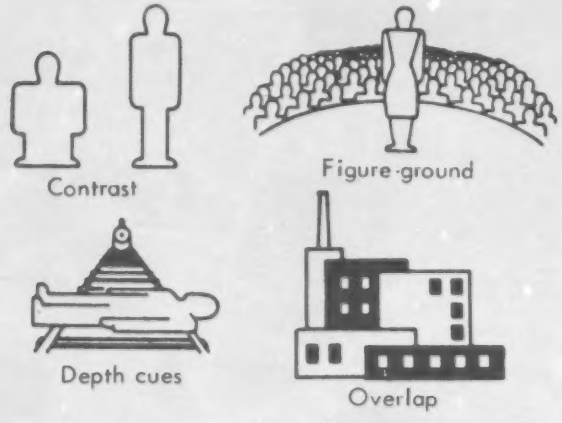
Structure refers to the distribution of materials in space and time, to unity and continuity. It deals with the construction of a visual presentation and the relationship between its elements. Structure in visual presentations may involve:

Some form on some background, so be sure your audience sees what you want it to see.

Grouping techniques that cause you to see

visual elements as belonging together. Grouping is accomplished by the proximity, similarity, continuity, closure, or common movement of the elements or objects.

Separating techniques that cause you to see visual elements as separate parts. Separation is accomplished by contrast (in shape, brightness, or size), figure-ground, depth cues, or overlap.



Integrating techniques that cause you to see individual elements or objects interwoven into a single coherent whole.

APPEARANCE-CLARITY

A visual's clarity refers to the ease with which people can understand it or "see through" it. Do viewers "get the point" quickly? A booth would rate high in clarity if you could get its message by merely observing it while walking past. A booth would rate low in clarity if you have to study it to get its message. A graph with appropriate pictures on its lines would rate higher than one with just words.

APPEARANCE-APPEAL

Although interest-getting devices may sometimes defeat their purpose, you must try to capture attention. Anything that is different, sudden, or provocative draws the eye. An effective caption or label on booths, posters, window displays, charts, and even the chalkboard can appeal to your audience. A good caption is brief, suggests action, and makes the viewer feel that it was written just for him.

Unusual size, shape, color, or use of white space also attracts attention. When other appeals fail, an element of mystery or suspense usually keeps an audience alert.

Motion, mechanical or with lights, draws attention. Flashers used in a functional way help tell your story as well as appeal to viewers. But don't use flashing lights for the main illumination of a visual.

ACCURACY-FIDELITY

Fidelity refers to reality or realism. Does your visual strictly adhere to the truth? Is it an accurate or honest presentation of an object or idea? For example, is the size of the stove in proportion to the other equipment in a model of a kitchen? The best way to get realism is to use actual materials or real objects whenever possible. Show food, cloth, or wood instead of pictures of them.

ACCURACY-VALIDITY

A visual's validity refers to its soundness. Is it scientifically well grounded?

A set of slides describing a recommended oat variety would have considerable validity if the pictures showed that the variety had been tested several years throughout the state in many locations.

Or, by changing the lighting from above to below, you can make two equally factual pictures of a person give the impression of either crime or heroism. Judgment in this case centers on the question of validity.

ACCURACY-CREDIBILITY

If it is believable and apparently authentic, a visual has credibility. Does your information come from a reliable source? For example, a drawing of an insect by a University entomologist would have more credibility than one by a cartoonist. Be sure your inferences are not impossible, absurd, or improbable.

APPROACH-TACTICS

If you plan your approach to fit the needs

of a particular audience, you are using good tactics. Your own objectives also help you decide what tactics are best. Your tactics in planning and using visuals greatly determine the success of your communication.

For example, at a meeting on soil testing, you could use the same slides that your audience recently saw on TV. The impact of the message on TV would reinforce your message.

When working in a community where attitudes are unfavorable to your program, your visuals might show success stories in other parts of the county. This tactic would be better than simply telling the people that they are wrong.

TECHNIQUE

The method of presenting a visual affects its communication value. If lights must be turned on and off several times during your talk, your audience may be irritated and miss the message. Or, if several people are needed to operate your equipment, your audience may become more interested in them than in you.

Complicated gadgets and stunts intended to capture interest actually may divert attention. People may wonder what makes a light turn red instead of listening to you.

Don't interrupt your talk to find and set up visuals. Good technique means smooth and seemingly effortless presentation--deliberate and concentrated practice is necessary.

ECONOMY

Your visuals may cost only a few cents or many dollars. But economy depends on more factors than money. The number of times you use a visual before it is out of date or worn out is important. The cost of transporting large visuals like exhibits also may be relevant.

The number of copies you need and can make from an original or a master affects the economy of a visual. Although a 1-minute television film may cost $80 to produce, the second print might be only $1.40. Posters printed by the offset process may cost $1 each for the first 50, but the next 500 may be only 15¢ each.

Often you can present the same message with different visuals, some expensive and others, just as effective, relatively cheap. Hand-lettered posters, charts, and exhibits are usually high priced. However, for only a few cents, you can type the same message on paper and transfer it to a transparency on a copying machine.

Economy of time is also a factor. Your secretary may be able to prepare a useful visual more economically than you or an artist can.

OTHER CONSIDERATIONS

The broad criteria we have discussed provide a basis for evaluating visual presentations, but other major factors also are involved.

Be sure that your visuals are audience-oriented. Plan visuals at the educational, cultural, and experience levels appropriate to the particular views of your audience. There's no point in showing pictures of crop-breeding techniques to farmers who know nothing about plant reproduction.

Also remember that visual techniques are only the means to an end. Effectiveness of visual aids usually can be assessed only in terms of total communication--not just visuals alone. A visual may rank high on all criteria and yet not be well coordinated with other information media used in a program. A carefully scheduled sequence is essential with certain visuals.

Four principles summarize this philosophy of using visuals effectively:

- Correlate visual communication efforts with other teaching materials.
- Use visuals to support the subject being taught.
- Relate visual messages to audience experience in order to reinforce other messages.
- Test visuals for response and effectiveness.

Of course, all criteria can't be applied to every visual. A visual may have poor appeal but still be effective. You may be completely justified in using visuals that rate high in only one or two categories. The number of ideas they help you communicate is what really counts.

2M--12-66

COMMUNICATIONS BULLETIN NO. 23

Decisions To Make —— Before You Visualize

GERALD R. MCKAY

If your message is to reach its target, you must aim it accurately. This is true no matter what channel you use--booklets, slides, posters, speeches, etc. But before you can determine how to launch your message, you have to make several important decisions.

Four main questions, all concerned with your goals, are involved. But you cannot answer them until you know who is--and where is--your audience. The success of your communication depends upon how correctly you answer these questions:

1. What are the specific needs of your audience and how did they arise?
2. What goals and results do you hope to achieve with your visual presentation?
3. What obstacles or particular problems will you encounter as your message is visualized and sent to the audience?
4. Can you test your visuals on a different audience before preparing large quantities of materials?

Of course, you cannot decide on your visuals until you determine what you want to accomplish. Consider the ends first, then the means--including visual means. Otherwise, you are putting the cart before the horse.

Planning a communication is similar to planning a trip. You must decide if the trip is necessary, if it will serve your purpose. Then you must decide where you are going, what route to take, and how to get there.

Occasionally, you may have plenty of time to plan a communication and to consider deliberately each question. Often, you will have to answer "off the cuff," keeping the questions in your mind as you plan your strategy.

KNOW THE NEEDS OF YOUR AUDIENCE

1 What are the specific needs of your audience and how did they arise?

Suppose your message concerns the remodeling of a kitchen to save labor. Let us say that your audience is composed of women who live in farm houses at least 10 years old. In this case, the specific need arose with your audience and is recognized by them.

A survey may be necessary to determine the size of your audience. This factor affects the promotion needed to create interest. You must also remember that the specific need may merely indicate a large problem. Perhaps installation of water and sewer systems must precede kitchen remodeling.

Once you know the specific need, determine whether a similar problem exists in other counties and states. If so, pertinent visual aids may be available from other people.

YOUR GOALS ARE GUIDES

2 What goals and results do you hope to achieve with your visual presentation?

Your long range goal in the kitchen example might be to have 50 percent of the old kitchens remodeled. However, your short range objective may be only to create a favorable attitude or to make actual drawings for a few kitchens. With this select audience, a strategically placed exhibit might help you reach your goal better than would a television show.

You must also decide what mastery of skills you will expect within 1 week, 1 month, 1 year, or 5 years. For the message to be effective, are formal instruction periods required? If so, will scheduled meetings be for large or small groups? This type of information can help you determine the need for posters.

Will you want your audience to identify things, follow fixed procedures, learn manual skills, understand concepts? Printed bulletins may answer some problems. Or, you may want to copy certain drawings on slides.

When you want people to remember figures, such as cupboard sizes, flashcards are useful. For layouts and shelf arrangements, you can use models or mock-ups.

All these references to specific visuals merely point out the importance of knowing your goals before deciding on communication channels and particular tools.

OBSTACLES MUST BE MET

3 What obstacles or special problems will you encounter as your message is visualized and sent to the audience?

First, be sure that your program's cost is feasible for most of your audience. Then discover what prejudices or adverse attitudes you have to overcome. Is your audience complacent? Does their background discourage the improvements you are promoting?

Does your audience lack certain skills necessary for accepting your message? Then charts, flashcards, and slides can help teach them. Do the women know how to read blueprints, figure bills of materials, select floor and counter coverings? If you must teach blueprint reading, for example, an overhead or opaque projector is an excellent visual tool.

Are meetings to be held out-of-doors? Then projected materials may be inadvisable. And television would be of little help if your audience is only a small percentage of the total population. If you have to move from one place to another, small window displays might be better than exhibits.

Other obstacles may be the lack of time or money to prepare, present, and distribute materials. Can you spend most of the yearly budget on this project? Are you or your staff free to prepare the needed visuals? Can these visuals be professionally prepared for a reasonable cost?

If you have an immediate deadline, use homemade flipcharts. But if time is ample, art work copied on slides might be better. Perhaps you can borrow needed materials from other counties or states. And lumber and appliance dealers might assist you either financially or with teaching materials. The kinds and number of visuals you can use will be affected by these considerations.

Finally, you must know how to capture the attention of your audience. If some attitudes are not favorable, an indirect approach may be more successful than a direct one. Motion pictures are effective when attitude change is needed. If the audience is not even aware of the problem, you could use a window display or portable exhibit. Perhaps you can call attention to your message by working with an organized group that holds regular meetings.

PRETESTING HELPS

4 Can you test your visuals on a different audience before preparing large quantities of materials?

Testing a training device with sample groups often results in significant improvements in the final product. Errors in organization, clarity, and production economy can be detected.

Your test group should be as similar as possible to your intended audience. Instead of farm women, try a 4-H Club or ladies aid. Hold this "dry run" far enough in advance to allow for evaluating, revamping, and producing final visuals. You may even decide to switch to other communication channels completely.

* * * * * * * * * * *

The decisions made on these four questions will largely determine what visuals you will produce. Consider each aspect seriously.

Teaching With Flannelgraphs

GERALD R. McKAY

The words flannelgraph, flannelboard, and feltboard identify teaching aids based on the principle of one piece of cloth material sticking to another. Flannelgraph usually means the sum total of pieces put on a background. Flannelboard refers to the background material, which may be flannel, felt, or any other cloth that has enough nap for pieces to stick to it.

The pieces may be made from cloth, paper, or anything backed with material like sandpaper or flocking that will stick to the background.

HOW TO MAKE A FLANNELGRAPH

A 3- or 4-foot wide flannelgraph is a good size for classroom use. Construct the background of plywood, masonite, heavy cardboard, or some other hard board. Slope the board backward at a 15° to 20° angle.

Then stretch flannel or a similar material tightly over the board. Cotton flannel and terry cloth are good cloths to use. Even better are coat linings with heavy naps. Choose colors such as medium gray, blue, maroon, or black.

For the backing for pieces you put on the flannelboard, use inch-wide strips of medium grain sandpaper, flocked paper, or small pieces of flannel.

Apply rubber cement to both the strip and the piece and allow them to dry before you put them together. Place strips diagonally about 3 inches apart on the back of each piece.

WHAT ARE ITS ADVANTAGES?

You can use a flannelgraph as a chalkboard for listing words, showing diagrams, or solving mathematical problems. It is more flexible than a chalkboard because you can shift pieces around and show various arrangements. Of course, you do have to prepare your materials in advance.

A flannelgraph has these advantages. It:

- Enables you to develop your story by showing one step at a time.
- Is relatively inexpensive.
- Is easily kept up-to-date.
- Can be adapted readily to many subjects.
- Is simple and easy to make.
- Provides continuity or sequence in your presentation.
- Enables your audience to form a visual image of your message.

USE IT EFFECTIVELY

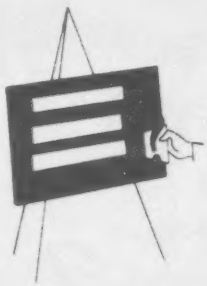
Keep your flannelboard and pieces in good condition. The backing strips and the nap on the flannel must have enough grip so they will cling to each other.

If the nap becomes worn or flattened out, you can rejuvenate it with a pocket comb or fine bristle brush. Be sure to keep the flannel stretched tightly over the board.

Place the flannelboard high enough so the bottom is level with the heads of your audience. Make sure the pieces are large enough for everyone to see. Minimum letter height should be 1 inch for each 25 feet to the farthest viewer.

Take a minute to explain how a flannelgraph works if your audience is seeing one for the first time.

Use your hands to give emphasis, not just to place pieces on the board. Point to the word or symbol you're discussing or sweep your hand over the group. The maximum interest point for each piece is the moment it is first exposed to view. When you move from one stage of your visualization to the next, review what you have said as you take the pieces off.

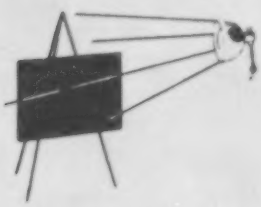


Bring the audience into the act by making them think about what your next point will be. Just before you put your final point on the board, pause. The suspense should emphasize the point in the minds of audience members.

Capitalize on change of pace. After moving along through your presentation at a slightly accelerating rate, pause for a moment and ask for questions. Another way to emphasize a point is to lift a piece off the flannelboard and take a step or two toward your

audience with it facing them.

Use attractive color combinations for lettering and artwork on your flannelgraph pieces. Good combinations are black on yellow; dark green, dark blue, or red on white; black on white; or white on black. Make the pieces as large and as bold as you can. Try to have a pleasing arrangement on the board when you're through. The fewer pieces you can use to tell your story, the better your story will be and the better your flannelgraph will look.



Put a floodlight near your flannelboard unless it is by a window or there is some other illumination in the room. The light from a slide projector is quite effective.

Be sure to rehearse with the flannelgraph before meetings. Then you will have everything in order and you will know how to arrange the pieces on the board most effectively.

AVOID THESE MISTAKES

Listed below are seven pitfalls that trip some folks. You can avoid them by watching yourself as you rehearse.

1. Symbol waving. The speaker grabs a visual--or a handful--usually with an ax-handle grip. Speaking vigorously, he chops or jabs at the audience with the visuals as his weapon. He may "tease" his listeners with glimpses of the visuals.

2. Discarding. The speaker brings more symbols than he can use and doesn't sort them out before the meeting. He looks over the stack, studies a symbol briefly, decides not to use it, tosses it aside, studies the next, and so on.

3. Anticipating. The speaker lets his hand anticipate his voice. In this contest, the voice doesn't have a chance. The instant the speaker reveals the symbol, every person in the audience registers its meaning. And almost certainly everyone misses what the speaker is saying.

4. Backsiding. The speaker turns away from his audience as if more fascinated by the artistry of his handiwork than by the personalities he is trying to reach. No one, of course, can arrange symbols in a good pattern without momentarily turning toward the board, but you should keep loss of eye contact to a minimum.

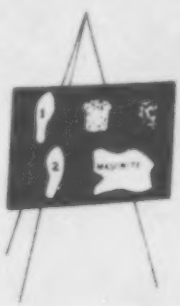
5. Blocking. The speaker stands in front of his flannelgraph, blocking all or part of the view. If you want to change to another subject for a minute, blocking may be a good technique. Otherwise, don't do it.

6. Troweling. The speaker not only places each piece carefully on the board, bu fondly smooths and flattens it with sensitive gesture

7. Telescoping. The speaker jams one symbol on top of another in such rapid sequence that no one has time to think about them.

OTHER FLANNELBOARD POSSIBILITIES

Many teaching materials will stick to a flannelboard. Rubber insoles to indicate steps, artificial rubber sponges for building blocks or graphs, and plastic foam for letters or figures are examples.



Some masonite will stick to flannel backgrounds. You can cut it into all sorts of designs. Slices of bread and most kinds of cloth will stick to flannel also. Suede-finished paper is easy to use on a flannelboard.

If you place thin sheet iron or screen beneath the flannel, magnets also will stick to the board. Then you will have a magnetboard as well as a flannelboard. A magnetboard will hold larger pieces than a flannelboard. You can use three-dimensional models of buildings, furniture, or farm machinery effectively on a magnetboard.

WHERE TO GET MATERIALS

Your local dry goods store carries flannel or other satisfactory material. Lumber yards handle masonite, plywood, and other similar hard board from which you can make good backboards for flannelgraphs. Variety or dime stores handle shoe insoles, rubber sponges, etc. Some school supply and stationery stores carry readymade flannelgraphs or the materials from which you can make one.

You can get a list of commercial sources of readymade flannelgraphs by writing to: Departme of Information and Agricultural Journalism, Institute of Agriculture, University of Minnesota, St. Paul, Minnesota 55101.

1M--7-70

An Overhead or an Opaque Projector?

GERALD R. McKAY

Did you ever need a projector to show a typewritten sheet or a diagram on a screen? If you want everyone in a room to see a page, you need a machine to project it. Either an opaque or an overhead projector could do this job. Each has advantages and limitations, and both machines have a place in an agriculture classroom or county extension office.

Both machines can handle full-page material. The opaque weighs 25-30 pounds -- about 10 pounds more than the portable overhead. Both are in the same price range -- $175 to $350.

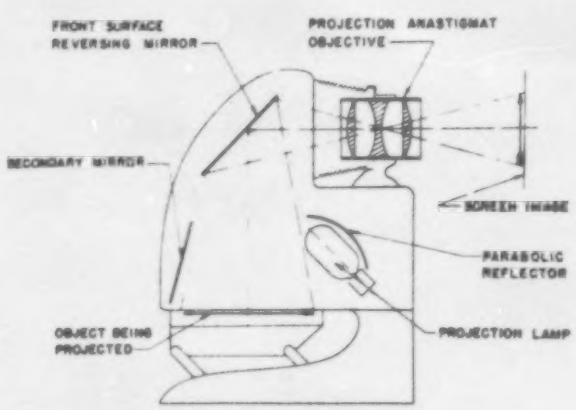
The basic difference between them is the method by which the machine projects. An overhead projector accommodates only transparent materials such as acetate sheets. As its name indicates, the opaque projector handles only materials through which light does not pass such as book pages or photographs. Little or no preparation of material is required when you use the opaque.

THE OPAQUE PROJECTOR

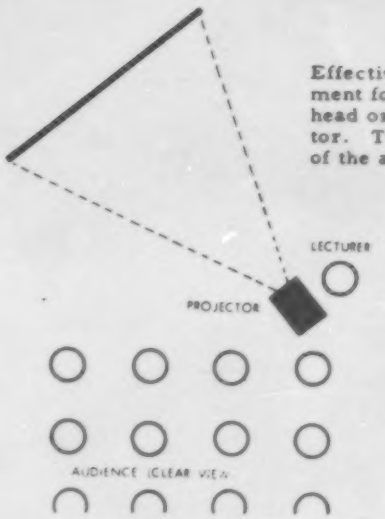
This device has been on the market for many years under several trade names such as Reflectoscope, Delineoscope, and Balopticon. It is made in various sizes, from a postcard model to one handling 8½- by 11-inch material.

Until recently, light output of all opaque projectors was relatively low. Although improvements have increased projection efficiency, you still need a completely darkened room for effective viewing.

The opaque projector has a short focal length lens. Therefore, it must be closer to the screen



Essential parts of the opaque projector.



Effective seating arrangement for either the overhead or the opaque projector. The machine is out of the audience's view.

than an ordinary 2-by 2-inch slide projector. Image brightness is increased by moving closer but image size is reduced. Most opaques cannot be focused if they are less than 6 feet from the screen.

A large screen is desirable with an opaque projector. If you show a typewritten sheet or book page, the screen image may have as many as 40 lines of type. Since letters on the screen should be 1 inch high (at a minimum) to be read at 25 feet, the screen should be at least 6 feet square. With a group of 10 or less, you can use a slightly smaller screen. By showing only half a sheet at a time and moving the projector back, you can make items appear large on the screen.

Keep the bottom of the screen level with the heads of your audience. To prevent a keystone-shaped image, use a projection table at least 4 feet high. Some opaque projectors have built-in pointers that direct a small beam of light to a spot on your screen. You can then stand near the projector and point to a particular item as you discuss it. A hand electric flashlight pointer also works well.

Some skill is required for maneuvering material in an opaque to cover certain areas of the screen. Shoving paper forward in the projector lowers it on the screen. Moving it to the right makes it appear to move left. Some opaques have rollers for rolling material in one side and out the other.

An advantage of the opaque is that it shows natural colors as they appear on your material. The overhead projector also shows color, but it

The opaque projector shows pages from books and magazines or 8½- by 11-inch typed sheets.

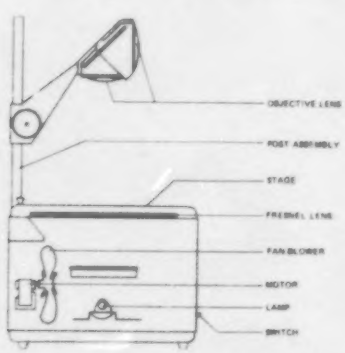
must be transparent color that you apply. For opaque projection, choose the brightest colors you can find.

This projector can also show a variety of flat articles such as paper money, cloth, seeds, leaves, leather, photographs, and charts. Objects with a significant third dimension are difficult to show because the limited depth of focus causes much of the material to be blurred on the screen.

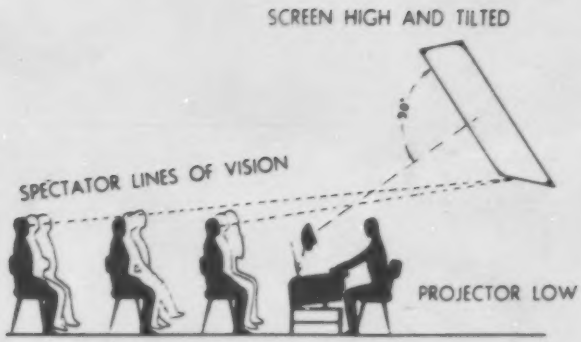
Liquids and even chemical reactions can be shown with the opaque projector. For example, you can show your audience how crystals accumulate or how a substance dissolves by using a shallow watertight pan with an opaque, light-colored bottom.

THE OVERHEAD PROJECTOR

This machine only projects materials on a transparent base -- a base through which light easily passes. Any line or mark on this base projects as a shadow or dark area. Like the opaque, it has a short focal length lens. Most models accommodate transparencies 10 by 10 inches in size. Some older models also will project 7 by 7 inch material. Two important advantages of the overhead, as compared to the opaque, are:



Essential parts of the overhead projector.



A good arrangement for using the overhead projector.

1. You can face your audience as you operate the machine.
2. You can draw or write on the transparency as you talk.

Furthermore, the overhead works well in a room that is only partially darkened. In fact, unless a direct light falls on the screen, you can often leave on room lights. Therefore, you can see your listeners and they can take notes.

With the overhead, you can also use overlays, either transparent or opaque. You can add or subtract sections of material and cover or uncover parts as you talk.

As with the opaque projector, you need a screen at least 6 feet square if your back row is 25 feet or more away. To prevent distortion (keystoning), tilt the top of the screen toward the projector until its surface is perpendicular to the axis of light. You can control the amount of distortion by the screen angle. Place the projector on a table about 2 feet high; then its writing surface will be at a convenient level and the projector will be out of the viewers' way.

A simple, common use of the overhead is as a chalkboard. You simply write on a clear sheet of a transparent material as it is being projected on the screen behind you. Use either wax pencil or a pen with quick-drying ink (in any color). You can also use opaque or transparent adhesive tapes for lines. Clear liquids can be shown with this projector, too. The dish must be shallow and transparent.

There are several inexpensive reproduction methods for transparencies including photographic, diazo, lift-off, and reflex.

MECHANICAL UPKEEP

These projectors, like all mechanical equipment, must be kept in good repair in order to give service. Both have powerful lamps and fans and other moving parts. Keep mirrors clean and in place; make sure no obstruction stops air circulation. When machines are carried in automobiles, motor mountings, mirror fastenings, and other adjustments may shake loose. Check these items frequently to make sure that they are in good operating condition.

New machines are being developed which will be more efficient, lighter in weight, and easier to use than present models. Aggressive educators, particularly in the field of agriculture, are using both opaque and overhead projectors at an increasing rate.

Use of commercial names does not endorse those mentioned nor criticize those not named.

INFORMATION SERVICE SERIES NO. 28

Preparing Materials for the Overhead Projector

Gerald R. McKay
Department of Information and Agricultural Journalism

University of Minnesota
Institute of Agriculture

Overhead projection is a dramatic method of presenting facts and ideas clearly, concisely, and effectively. It was designed to help a speaker communicate with his audience with maximum impact. Its unique advantages over other methods are making it the choice of an increasing number of businesses, schools, and other educational organizations.

Advantages

*Since the instructor faces and talks directly to his audience, he maintains continual contact.

*Room lighting is not critical. Projected images can be seen clearly with enough room light for students to take notes.

*The instructor controls the equipment with a switch at his fingertips.

*It is simple and easy to use, and materials for it are relatively easy to make.

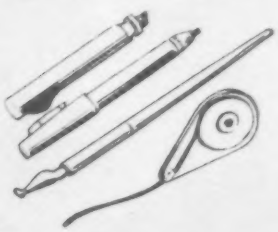
Making Visuals

Overhead visuals first must be put on a transparent base. In this respect, the overhead projector differs from the opaque projector, which will show a printed page or other opaque material directly.

The most popular size overhead currently is 10 by 10 inches. This means that the stage on which material is placed is 10 inches square. The actual transparency, however, shouldn't exceed 9½ by 9½ inches.

Materials Used

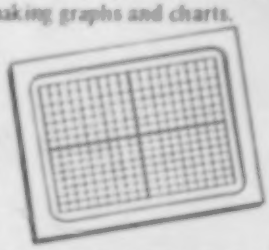
Several kinds of transparent base materials are on the market. Your choice will depend on how you wish to present your message and the copying process(es) you have available.



If you use the overhead in place of a blackboard, clear cellulose acetate sheets or a roll .005 inch thick is all you need. Sheets are easier to handle if they're mounted in cardboard frames. A china-marking pencil or any of several brands of special pencils made for the purpose will enable you to write or draw on the acetates. You can get these pencils as well as a number of brands of inks in many colors. Most of the pencils and some of the inks can be washed off easily, but some are permanent. Acetate sheets also are made in several colors.

Colored transparent tapes are available in different widths, are inexpensive, and facilitate making graphs and charts.

Transparencies with cross section lines make it easy to draw graphs showing statistical materials. As a rule these transparencies should be prepared in advance of a meeting, although it is simple to write or draw in front of a group.



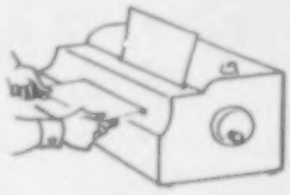
Readymade transparencies like this are available or can be made on most copy machines.

Another useful tool for handmade transparencies is the air brush or aerosol bomb that enables you to shade and produce other effects. You also can type on certain transparencies with special carbon paper or a special typewriter ribbon.

A reverse-image transparency can be made easily by writing, drawing, or typing on a sheet of carbon-coated clear film. This gives the appearance of a negative on the screen, and your message will show up brightly and clearly through a dark background.

Machine Copiers

A more effective method of putting typed material on a transparency is with one of several kinds and makes of duplicating machines. These include the photographics, heat processes, electronic copiers, and diazo process machines. They all make a finished transparency the same size as the original. Trade names like Thermofax, Transparex, Xerox, and others are common in this field.



In using copying devices of this type, you must use a transparency material for a specific machine. Clear untreated acetate will not work with any of them. The material made for use with a Thermofax machine will not work in one of the electrostatic machines, and vice versa. And if you must

increase or decrease the size of your material, a photographic enlarger is necessary.

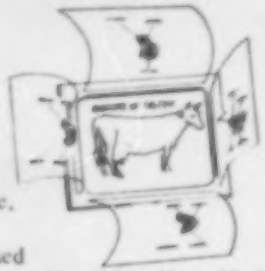
Most copying machines make transparencies from a master of either typed material or art work. In some cases an intermediate negative is used to make the finished product. The cost of transparencies made from original materials is currently from 15 to 35 cents each. Those produced by photographic enlargement currently cost several times this amount.

The *diazo* process, which frequently involves names like Tecnifax, Ozalid, Bruning, Viewlex, and others, will make transparencies in a half dozen or more colors. In this process, the master must be on either a translucent or clear base. Tracing paper is commonly used for the master copy. The treated transparency material is exposed through the master to ultra violet light. Color in the clear or unprotected areas is destroyed while the protected areas retain their original color. Ammonia development then brings this color out and makes it permanent.

Paste-on letters are convenient to use in making the masters on tracing paper. These usually are combined with art work or other pasted-on material to produce the desired message on the transparency.

Infrared copy machines will make transparencies directly on sensitized material or can be used for the first step in the "Transpatex" process. This latter transparent material is run through a water bath after being exposed to infrared heat and will make transparencies in several colors.

Transparencies made on any of the machines can be mounted one above the other. Each overlay is hinged to a different edge of the cardboard frame and can be used to build a message one step at a time. Or, in this manner, a complicated picture or concept can be taken apart by removing the overlays one by one.



There are other ways of adding color to transparencies. Translucent sheets sheets of Zipp-a-tone, Craftone, Bourgess, or other brands of paste-on color sheets can be used effectively. Quick drying colored inks such as Magic Marker and Bourgess are effective in adding color to clear or black and clear sheets.

Watch Size and Layout

Since most duplicating machines will copy a full size 8½- by 11-inch page, there is a tendency to try to make the transparency include a full page of typewritten material. Physically this can be done, but it's almost always a poor policy to put more than 12 to 15 lines of typewritten material on a page because your audience will not be able to read it.

True, if you use a 10- or 12-foot screen, people sitting in the back might be able to see the words, but most screens are more like 5 or 6 feet wide.

One way to make your material larger is to use so-called "sightsaving type," which is about twice the size of that in the ordinary typewriter.

Sometimes the projector can be moved back from the screen to enlarge the image so everyone can read. However, this may mean placing the projector in the middle of the room, which is not desirable.

The best solution is to make letters and drawings large and keep the pages uncrowded. Using a variety of sizes and styles of typefaces or lettering also makes the visual easier to read and more attractive. Underlines, check marks, or stars are useful for emphasis.

Keep series of transparencies uniform in size. If the overall size varies, the projector will have to be moved forward or backward to keep the screen image uniform. This is inconvenient as well as time-consuming.

Transparencies for the overhead projector are no more difficult to make than work you might put on a chart, poster, or blackboard. With a little practice you can make them quickly and at a reasonable cost. They can be among your most effective visuals.

* * * * * *

Trade names are used for convenience; mention of a product does not imply endorsement, and no criticism is implied of products not mentioned.

(Revised October, 1973)

Guide for Operating Projection Equipment

PROBLEM AREA: Motion-picture projectors (8 mm and 16 mm)

PROBLEM: What procedure should be followed in operating a sound motion picture projector?

INTRODUCTION:

Sound controls on motion-picture machines are identical with those of simple record players.

Film moves through a motion-picture projector in much the same way that it passes through a filmstrip projector.

Sound is carried on a track at the edge of the film. The film must move smoothly past the sound drum--the point where sound is picked up from this track.

Motion pictures are typically from 400 to 2000 feet long (unlike filmstrips, which are about 5 feet long). This length produces special problems of film storage and handling.

STEPS	KEY POINTS
1. Place projector on stand.	1.1 Open the projector cases. 1.2 Place the speakers at about the ear level of the listeners. 1.3 Extend the speaker cord to the projector. 1.4 In most projectors the speaker is an integral part of the machine. Extra speakers are used for large audiences.
2. Attach the speaker and power cords at the projector and to the wall receptacle.	2.1 Secure cords to the projector stand legs (make loose knot in cords where the power cord and extension cord join.)
3. Turn on the amplifier switch.	3.1 Secure electricity to run through the amplifier.
4. Attach reel arms and reel drive belts.	4.1 Make sure the spring-wire cables are attached properly and NOT twisted.
5. Turn on the motor.	5.1 Turn on the lamp after the motor has been running for a few seconds

STEPS	KEY POINTS
6. Adjust the projector.	6.1 Elevate the front of machine and move projector toward or away from screen until the light fills the desired area. If the projector has a zoom lens, make this adjustment instead.
	6.2 Focus the light beam by turning the lens barrel until the beam edges are sharp--STOP THE PROJECTOR.
7. Clean the channel and pressure plate.	7.1 Open the film channel and clean both the channel and the pressure plate with the film-channel brush. A very soft bristled brush may be used as a substitute.
8. Thread the projector.	8.1 Lock the full reel of film firmly on the feed spindle.
	8.2 Remove any tape that may be on the end of the leader.
	8.3 Engage the film leader on the first sprocket wheel. IMPORTANT: The sprocket teeth fit through the sprocket holes in the film. DOUBLE CHECK THIS OPERATION.
	8.4 Insert the film in the film channel.
	8.5 Close the gate carrying the pressure plate--establish the upper and the lower loops according to the guidelines on the projector.
	8.6 Thread the film around the sound drum and stabilizing rollers.
	8.7 Continue around the lower sprocket wheel. Be sure that there is some tension on the film as it passes around the sound drum. The drum must be turned by the film as it passes through the projector.
	8.8 Run the film under a snubber roller before threading it on the take-up reel.
	8.9 Insert the film leader in the reel slot--rotate the reel until a full turn or more of leader is wrapped on.

STEPS	KEY POINTS
9. Operate the projector.	9.1 Set the sound-volume dial about 1/3 or 1/2 on the scale.
	9.2 Set tone at normal or mid-point on the scale.
	9.3 Have someone turn off the lights in the room.
	9.4 Turn on motor.
	9.5 Turn on lamp as film nears a picture.
	9.6 Adjust focus the instant an image appears on the screen.
	9.7 Adjust volume, then tone.
10. Close the showing.	10.1 Turn off lamp as the end title fades.
	10.2 Turn the volume down to zero as the sound fades or ends.
	10.3 Turn off motor when all the film is on the take-up reel.
	10.4 Turn off amplifier if no more films are to be shown.
11. Rewind the film.	11.1 Insert the leader on the tail end of the film in the slot on the supply reel.
	11.2 Engage rewind drive.
	11.3 Touch the side of spinning reel with fingers to stop rotation of reel--reels must turn opposite to the direction they turned when projecting.
12. Store the projector.	12.1 Disconnect all cords.
	12.2 Coil all cords and place them in the spaces provided.
	12.3 Dismantle the machine and put the reel arms, cables, and spare reel in the positions provided for storage.
	12.4 Retract the elevating mechanism.
	12.5 Turn off all switches--place all levers in normal, forward operating position (NOT in reverse or rewind.)
	12.6 Close and lock all lids firmly.

REMEMBER:

Stay with the projector during the entire showing to:
1. correct focus, if necessary.
2. adjust sound, if necessary.
3. shut off machine immediately in case of faulty operation.

PROBLEM AREA: Carousel slide projector

PROBLEM: What procedure should be followed in operating a carousel slide projector?

INTRODUCTION:

The carousel slide projector is relatively simple to operate and may be set up rather quickly. Automatic slide changer divices are provided on most models today, and a remote control device allows the teacher to stand at the front or back of the class and guide the discussion.

STEPS	KEY POINTS
1. Place the projector on a stand	1.1 Connect the power cord to a wall outlet. The cords may be stored in a compartment on the bottom of the machine or in the projector case.
2. Insert the lenses.	2.1 The lenses should be stored separately and must be placed in the projector. Match the notched track with the spocket in the machine and turn the sprocket so that lenses move in and out easily.
3. Insert the slide tray	3.1 The slide tray has a notched area at number zero and this should be matched with the arrow on the machine. 3.2 The tray will not fit on the matchine unless these notches are in line.
4. Insert the remote control cord at the rear of the projector.	4.1 The male plug must be aligned with the outlet on the machine. Note the colored dot must be up for remote control to work properly.
5. Turn on the lamp and insert a slide	5.1 Turn on the switch on rear of machine. 5.2 Press the remote control forward button for one slide change. The "select" button will allow you to rotate the tray to any position. 5.3 Adjust the height of the image on the screen. 5.4 Focus the image by pressing the focus button. 5.5 Adjust the size of the picture by turning the lenses barrel if the

STEPS	KEY POINTS
	projector has a zoom lens.
6. Turn off the lamp.	6.1 Turn the switch to the fan position so that the fan will cool the lamp before storage.
7. Store the projector.	7.1 When cool air blows out around the bulb. 7.2 Remove the slide tray (it will only come off when set back at zero), remote control, and the lenses. 7.3 Place equipment in case carefully. Do not store the cords so that they will scratch the lens.

PROBLEM AREA: Filmstrip Projectors

PROBLEM: What procedure should be followed in operating a filmstrip projector?

INTRODUCTION:

Film projectors are similar in their general operating characteristics, to standard slide projectors.

STEPS	KEY POINTS
1. Set the projector on a stand	1.1 Remove dust cover. 1.2 Connect power cord. 1.3 Turn on lamp.
2. Adjust the projector.	2.1 Tilt the projector as required. 2.2 Move the projector toward or away from the screen to obtain appropriate image size. 2.3 Focus the light beam on the screen to sharpen edges of the white-light area.
3. Insert the filmstrip in the carrier.	3.1 Keep fingers off picture surfaces; filmstrips are susceptible to scratching. Handle only by the edges on the blank leader. 3.2 Face the screen, read the filmstrip title, turn the filmstrip (left or right) head down, push the filmstrip gently into the channel until it stops. 3.3 Continue to push gently and at the same time, begin to turn the operating knob.
4. Operate the projector.	4.1 Focus until the image is sharp when a picture, title, or focus frame appears on the screen. 4.2 Adjust the framing control, if the image is split between two frames or is "out of frame". 4.3 Rotate the filmstrip--advance lever to change the picture on the screen. (Make the changes firm and quick; DO NOT "inch" the picture slowly.)

STEPS	KEY POINTS
5. Store the filmstrip projector.	5.1 Turn off the lamp first and then let the fan run a few moments to cool the lamp. 5.2 Disconnect the power cord. 5.3 Coil the power cord and store neatly. 5.4 Retract the front lens and level the machine before replacing the lid. 5.5 Make sure that no filmstrips have been left in the case and that no accessories or spare parts are omitted from the case.

CORRECT METHOD FOR HANDLING FILMSTRIPS:

1. After a filmstrip is used, it will be in a loose coil, too large to put in the can.

2. The correct method is to roll the filmstrip into a coil small enough to fit the container.

3. Never cinch a filmstrip to reduce the size of the coil. Cinching will produce scratches on the film.

PROBLEM AREA: Opaque Projector

PROBLEM: What procedure should be followed in operating an opaque projector?

INTRODUCTION:

Flat, printed, or drawn pictures or other materials, and some three-dimensional objects may be projected in opaque projectors.

The opaque projector operates with reflected light. The lamp illuminates the material; the image is reflected by a mirror through the lens to the screen.

STEPS	KEY POINTS
1. Place projector on stand.	1.1 Remove duct cover. 1.2 Connect power cord.
2. Place material to be projected on projection platform.	2.1 Place materials on the platform face up, with the bottom of the picture toward the screen (as the operator faces the screen).
3. Turn on motor and lamp.	3.1 Adjust the tilt and level by extending the legs.
4. Focus on the screen.	4.1 Move the projector toward or away from the screen to obtain satisfactory picture size. 4.2 Correct the focus until image is sharp.
5. Operate the projector.	5.1 Operating the opaque projector involves only the proper insertion of materials in the desired sequence. 5.2 Use small adjustable lighted arrow to point out specifics on the screen.
6. Store the opaque projector.	6.1 Detach the power cord. 6.2 Cover machine with the dust cover. 6.3 Remove the projector from the stand.

PROBLEM AREA: Overhead Projector

PROBLEM: What procedure should be followed in operating an overhead projector?

INTRODUCTION:

Some advantages of overhead projectors:

1. The operator is able to face his audience.
2. Permits successful operation in a lighted room.
3. The operator can point out features appearing on the screen by pointing to the materials at the projector itself.
4. A wide variety of techniques may be used to prepare materials for use in it.

STEPS	KEY POINTS
1. Set up the projector.	1.1 Place the projector on a suitable stand. 1.2 Connect the power cord. 1.3 Adjust room lighting for optimum viewing. 1.4 Keep all glass surfaces clean.
2. Adjust the top mirror.	2.1 Tilt the top mirror and adjust the light to proper screen height. 2.2 Make a rough focus.
3. Place the material on the projector stage.	3.1 Dirt on the stage glass will project as a screen image. 3.2 Check screen to see if material is positioned on the stage correctly.
4. Adjust the focus knob.	4.1 Focus on printing or letters if possible.
5. Practice pointing to items on the transparency.	5.1 Press the pointer tip firmly on the material. 5.2 Keep your body out of the light beam.
6. Install the plastic roll over the projection platform.	6.1 Make sure rollers are engaged firmly and that the plastic rolls across the projection platform freely.

STEPS	KEY POINTS
7. Practice drawing and lettering on the plastic roll.	7.1 Make frequent checks of the writing by looking at the projection screen. 7.2 Practice using slides and transparencies to obtain smooth transitions from picture to picture.
8. Shut the machine off.	8.1 Turn off the lamp first and then let the fan run a few moments to cool the lamp. 8.2 Disconnect the power cord.

REMEMBER:

Keep all glass surface in overhead projectors clean!! Check manufacturer's instructions for cleaning materials. Clean surfaces with clean, soft, lint-free cloth.

Guide for Evaluating the Equipment and Materials

I. Books

A. Quality books should:

1) Deal specifically with subject matter.

2) Contain current content.

3) Be well organized.

4) Emphasize main points.

5) Contain good summary phrases, for example, end-of-chapter summaries.

6) Include pictures, diagrams et cetera to further clarify difficult points.

7) Not contain so much excess material that the basic content is lost.

8) Be selected for the age and background of the student.

B. Advantages in the use of a book:

1) Books are readily available to the student either through purchase or the library.

2) No special equipment is needed to read a book.

3) The student can stop, continue or reread the material at any time.

4) The student can skim the material or vary his speed of reading according to his ability.

5) Notes can be taken in the margins or underlining can be done when the student owns his own copy.

6) Material can be read aloud or shared with others.

C. Disadvantages in the use of a book:

1) The content may confuse the reader and further explanation cannot be immediately obtained.

2) Poor readers may not grasp the material.

3) Reading leaves much to abstract interpretation.

4) The philosophical approach may not be consistent with that of your program.

5) The material may be too simple or too advanced for the level of the student.

D. The instructor can increase learning by:

1) Emphasizing the important points during the lecture or discussion, but should not repeat the book verbatim.

2) Relating readings to specific course objectives.

II. Duplicated Materials

A. Quality duplicated materials should:

1) Be clear and readily readable

2) Be specific material the student cannot secure elsewhere.

3) Be relevant to area of study.

B. Advantages in the use of duplicated materials:

1) The student may read or reread at his leisure.

2) When only one copy is available it can be duplicated for each student.

3) A student may take notes, underline or use as desired.

4) The student can build a file of material.

C. Disadvantages in using duplicated materials:

1) Some materials do not make clear and readable copies.

2) Copyright laws should be considered.

D. The instructor may increase learning by:

1) Conducting a discussion after the student has read the material.

2) Asking questions on the important points.

3) Requiring the reading of an important article.

4) Underlining or emphasizing special points.

III. Overhead Projector and Transparencies

A. Quality transparencies should:

1) Have a single idea or minimum of ideas.

2) Be simple and uncluttered.

3) Use color where appropriate.

4) Be neat and carefully lettered, if handmade.

5) Contain print or images which can be seen in any part of the room.

6) Contain material that needs visualization.

B. Advantages in the use of an overhead projector and transparencies

1) The teacher can:

face the class
write in a normal position
create while talking
point to stage rather than the screen
indicate a point without loosing eye contact
write what is appropriate at that particular moment.

2) The room need not be darkened.

3) The overhead projector requires little skill to use.

4) Magazine pictures, in color, can be transferred to a transparency.

5) The order of content can be changed and material presented as the moment dictates.

6) The teachers can quickly create their own material rather than rely on ready made materials.

C. Disadvantages in the use of the overhead projector and transparencies:

1) Some single ideas can be over-visualized.

D. The instructor can increase learning by:

1) Using color to emphasize ideas.

2) Revealing material in small segments.

3) Showing material in an appropriate sequence.

4) Adding material, via overlay, in small segments.

5) Writing on a prepared transparency.

6) Having the student make his own transparencies.

IV. Opaque Projector

A. A quality opaque projection should:

1) Be large enough to be readable when projected.

2) Fit the floor of the projector.

3) Be clear enough to project well.

4) Be flat so that all of the image will be clear when projected.

B. Advantages in the use of opaque projection:

1) Any printed material or picture can be projected.

2) Material can be projected and the enlarged image can be traced for other uses.

3) The opaque projector allows a large class to see book or printed material that otherwise only a small group could see at one time.

C. Disadvantages in the use of opaque projection:

1) The room must be entirely dark for adequate viewing.

2) The projector can burn materials.

3) The opaque projector is difficult to focus if your material is not completely flat.

4) The opaque projector is large and cumbersome making moving difficult.

5) So much light radiates from the projector that some students may find it difficult to see the screen.

D. The instructor may increase learning by:

1) Having the student make the presentation.

2) Using actual materials rather than simulations.

V. Visual Symbols - Graphs, Charts, Diagrams, Cartoons, Posters, Drawings.

A. Quality visual symbols should:

1) Be neat and not cluttered.

2) Utilize color where appropriate - in most formats it adds a great deal.

3) Be rich with meaning for the learner.

4) Speak directly to the point.

5) Use complimentary colors which are pleasing to the eye.

6) Not contain so much material the reader must constantly turn back to the key.

7) Have a title or caption which draws attention and/or explains purpose clearly.

8) Be appropriate size for the intended purposes.

9) Be relevant to the learner and enable him to see the major relationships without confusing details.

10) If presenting data, give the source and date.

11) Use an appropriate scale or key.

B. Advantages in the use of visual symbols:

1) Visual symbols can be simple and not extremely artistic -- you are merely suggesting not reproducing.

2) Visual symbols can be put on other media (e.g. transparencies, filmstrips, slides, etc.).

3) Visual symbols can offer new approaches to material.

4) Some topics are timeless and never outdate.

C. Disadvantages in the use of visual symbols:

1) Their use, unless on projected media, is restricted to a small area or small group at one time.

2) Many aspects of your program material can be better shown by using the real thing.

D. The instructor can increase learning by:

1) Emphasizing important ideas.

2) Using visual symbols on or with other media.

3) Introducing the material gradually rather than all at once.

4) Using larger materials and limiting the amount of information.

5) Involving the student in preparation.

VI. Recorded Materials

A. Quality recorded materials should:

1) Have good technical qualities,

I.e. voice clear
adequate recording level
absence of mechanical noise
no background interference
no distortion

2) Utilize a voice which sounds good when recorded.

3) Leave adequate spaces if responses are required.

4) Include only pertinent material, not irrelevancies.

5) Avoid the passive voice and use direct forms of address.

6) Limit the amount of new material, particularly new terms, which require much stopping and repeating. These can be presented in other ways.

B. Advantages in using recordings:

1) Recordings are easy to prepare and use.

2) Recording tape is inexpensive and can be reused indefinitely.

3) Repairs are easy to make.

4) Material can be presented with space left for student response.

5) Recordings can be used in combination with most other media.

6) Recording equipment (i.e. cassette recorders) can be easily transported to any area.

C. Disadvantages in using recordings:

1) Recordings are an abstract medium when used alone.

2) Recordings can be extremely dull depending on voice, content and length.

D. The instructor can increase learning by:

1) Limiting the length of time the student must listen to a voice presentation.

2) Planning other activities which give the student a break from the recording.

3) Interjecting recorded material rather than always running it parallel with other media.

4) Speaking distinctly and at an appropriate rate (comprehension of simple material is most effective at approximately 160 words/minute.

VII. Flat Pictures

A. A quality picture should:

1) If backed (this is preferable), be neatly done (i.e. no wrinkles or glue lines).

2) Be suitable for the age and background of the student.

3) Be in an artistic grouping when several are used.

4) Convey the teacher's ideas clearly to the viewer.

5) Be a size suitable for a specific purpose.

6) Represent actual size or be so labeled.

7) Contain a limited number of cue values for response.

8) Be within the visual vocabulary of the intended audience.

B. Advantages in the use of flat pictures:

1) The student may view a picture as long as he chooses.

2) Pictures are often free and easy to obtain, since hundreds are available.

3) Cartoons and printed materials may also be utilized.

4) Flat pictures can be wet mounted for permanent preservation.

5) Flat pictures used in a display or flipchart can be readily available so student need not go to a book.

6) Flat pictures can be used to convey emotions.

7) Flat pictures can be incorporated in other types of media.

C. Disadvantages in the use of flat pictures:

1) There is no depth perception since pictures have only one dimension.

2) Flat pictures can only be used by a small group or one person at a time.

3) Flat pictures without verbal information can be misleading and open to much interpretation based on past experience, since this is an abstract medium.

4) Flat pictures require much space for storage.

VIII. Slides

A. Quality slides should:

1) Have an uncluttered background so attention is focused on content.

2) Show the real thing.

3) Contain only one main idea.

4) If printed material is used, be easily readable when projected.

5) Provide some means of identifying the actual size of the photographed material.

6) Have good technical qualities,

- readable print
good lighting
clear image

B. Advantages in the use of slides:

1) Slide presentation can be updated, rearranged, individualized for the group involved.

2) Slides, when produced, need not be taken in sequence.

3) Slides can be meaningful without narration.

4) When learning a skill, each step can be viewed and practiced indefinitely before moving on.

C. Disadvantages in using slides:

1) Slides do not show motion.

D. The instructor can increase learning by:

1) Showing both the right and wrong aspects.

2) Showing the slide for an appropriate length of time, not too rapidly or too slowly, for the intended audience.

3) Combining slides with other media.

I.e. Audiotapes
Transparencies
Super 8mm film loops

4) Planning for learner participation.

5) Good coordination of the slides and any narration.

IX. Filmstrips

A. A quality filmstrip should:

1) Be clear and use closeups when appropriate.

2) Use live subjects in areas where needed or available.

3) Use color to distinguish the different parts of a diagram.

4) Have a logical sequence.

5) Have a written script in addition to the record, where this is appropriate.

6) Provide the teacher some means of keeping the correct picture with the correct narration if the projector is not automatic.

7) Utilize cartoons if they are more effective in making the point.

8) Utilize a musical background when it helps in emphasizing a subject.

B. Advantages in the use of a filmstrip:

1) Filmstrips can be viewed on a small viewer while reading the script, (preferred by many students)

2) Filmstrips can be used at any pace.

3) Filmstrips can be used without narration for test purposes.

4) Filmstrips can be easily converted to a slide sequence.

5) Filmstrips are a step-by-step skill sequence which can be used instead of slow motion.

6) The teachers can replace the commercial narration with their own information, if desired.

C. Disadvantages in the use of a filmstrip:

1) Filmstrips quickly show the effects of handling and misuse.

2) Filmstrips are difficult to repair and a splice is always visible.

3) Filmstrips cannot (unless cut apart) be edited or changed. This then makes the record narration unuseable.

4) There is a decrease in flexibility since the sequence is always the same.

5) Filmstrips are not suitable if motion is required.

D. The instructor can increase learning by:

1) Stopping at points during the filmstrip to discuss the material.

2) Having the student provide narration.

X. 16 mm Films

A. Quality films should:

1) Have their content organized and well coordinated.

2) Contain pertinent material, with a minimum of extraneous material.

3) Be relatively current:

i.e. clothing
cars
content

4) Ideally contain color, since it is preferred by learners.

5) Contain printed titles or words since they increase teaching effectiveness.

6) Identify the main idea or purpose early in the film.

7) Show quality in the technical aspects:

i.e. sound and picture synchronization
clear, lifelike soundtrack
sharp picture

8) Identify changes in actual size (i.e.: in a closeup).

9) Be seen from the view the learner would see it.

B. Advantages in the use of films:

1) Films can reproduce reality.

2) The student can see special things not available in the environment.

3) There is an increase in retention and interest when using films.

4) There are hundreds of films available and many are free.

5) Films can show realism especially when they are in color.

6) Films can be easily repaired.

7) Films can bring the resource people to the classroom.

8) Films are especially good for conveying attitudes or feelings.

C. Disadvantages in using films:

1) A film becomes outdated quickly and easily.

2) Films are expensive to purchase or produce.

3) A film might contain too much melodrama.

4) Films tend to consume more time than other media in getting the point across.

D. The instructor may increase learning by:

1) Presenting a guide before the film to allow the student to concentrate on seeing the film and not taking notes.

2) Conducting a discussion prior to the film to alert students to important points.

3) Stopping for discussion during the film rather than at the end.

4) Supplementing with related materials.

5) Discussing at the end of a film.

6) Using the projector capabilities of still framing, reversing or rerunning when appropriate.

XI. Filmloops (8mm)

A. Quality filmloops should:

1) Be accompanied by some verbal information either printed or taped.

2) Include only basic element or a single concept.

3) Contain printed titles to increase effectiveness.

4) Have a plain background that does not distract from the area of concentration.

5) Utilize tight closeups when appropriate.

6) Have smooth camera motion with no overuse of zoom, dissolve, etc.

7) Show action the way the learner would see it if he were doing it.

8) Not utilize motion which is unnaturally slow.

9) Utilize printed titles rather than dissolves to indicate passage of time.

B. Advantages in the use of filmloops:

1) The film need not be handled either when loading or rewinding.

2) Filmloops can be repeated as many times as desired.

3) Filmloops are short and contain single ideas.

4) When using the silent filmloop the teachers can add their own narration.

5) Filmloops can be used in large or small areas with any amount of light.

6) Filmloops can easily become a part of a self learning package.

C. Disadvantages in the use of the filmloop:

1) Motion can be stopped for only short periods of time.

2) If a certain segment is desired the whole unit must be repeated.

3) It is difficult to make copies from the original print unless the more expensive format of 16 mm is used.

4) Film loops may be time consuming to plan and produce.

5) Silent filmloops cannot adequately convey verbal interaction.

6) Over implification can decrease learning.

D. The instructor may increase learning by:

1) Using their own narration to direct the student's attention to specific things.

XII. Microfilm

A. Quality microfilm should:

1) Be easily readable

2) Have a reader-printer readily available for use.

B. Advantages in using microfilm:

1) Large quantities of information can be readily available.

2) Irreplaceable materials can be preserved and still used.

3) Large quantities of material can be stored in a small space.

4) Microfilm is becoming less expensive to buy than some original materials or even copies.

C. Disadvantages in using microfilm:

1) The filming equipment is expensive.

2) The reader-printer is expensive.

D. The instructor can increase learning by:

1) Providing a guide or bibliography to pertinent materials.

XIII. Models

A. Quality models should:

1) Have the important parts clearly identified.

2) Have an accompaying guide to unlabeled parts.

3) Clearly evidence a relationship to actual size.

4) Be as much like the "actual" as possible.

5) Have movement ability if possible.

6) Be adaptable to realistic performance of skills.

7) Be easy to assemble and disassemble.

B. Advantages in using models.

1) The student can disassemble or assemble to see the relationship between various parts.

2) The student has the opportunity to practice in order to reduce anxiety in the real situation.

3) Many basic models do not change, thus model does not become outdated quickly.

C. Disadvantages in using models.

1) Models are a stationary unit which cannot be changed or updated.

2) Models are not the real thing in color or texture.

D. The instructor may increase learning by:

1) Making models available to the student for independent practice.

2) Providing an identification guide.

3) Providing worksheets to be filled out in relationship to the model.

4) Having the student orally identify parts of the model.

XIV. Videotape

A. Quality videotape should:

1) Utilize narration rather than live dialog for demonstrations when this contributes to smoothness of presentation.

2) Utilize printed titles and words to increase effectiveness.

3) Have good technical quality, for example:

clear, sharp picture,
no noise interference
synchronization of voice and picture

4) Employ good camera action,

i.e. smooth motion,
appropriate use of zoom, fade, dissolves,
motivated angles and changes,
closeups where appropriate,
good picture composition.

5) Utilize graphics which are neat, readable and in a form to be handled with ease.

6) Have an uncluttered background.

7) Utilize colors appropriate to the black and white or color format, whichever is used.

8) Feature appropriately dressed talent, avoid flowered clothing, shiny or loud jewelry.

9) Be used for presentations not immediately available to a large group all at one time.

B. Advantages in using videotape:

1) Videotape can show motion and special closeups.

2) Videotape can be tailor-made to the teacher's and student's needs.

3) Videotape can be easily erased and reused.

4) A situation can be recorded and replayed for evaluation either in part or whole.

5) The performance of special teachers or material can be supplied to large groups of students.

C. Disadvantages in using videotape:

1) Videotape usually requires extra filming light for good quality pictures.

2) Many technical problems can be associated with videotape equipment.

3) Some cameras and video tape recorders require the services of a technician.

D. The instructor can increase learning by:

1) Slowing the narration for increased comprehension.

2) Using the slow motion or still frame capabilities of the recorder.

3) Evaluating the video taped activity with the student.

4) Avoiding the "straight face" lecture format.

5) Utilizing "cliff hangers" on open ended questions.

6) Planning for student involvement.

7) Posing more problems and presenting more raw data with fewer conclusions.

XV. Programmed Materials

A. Quality programmed material should:

1) Have precise objectives, the achievement of which can be measured.

2) Provide immediate knowledge of results at frequent intervals.

3) Utilize small steps, each building on the other, so the student may proceed independently.

4) Show evidence of repeated testing or tryout with students as part of its development.

5) Include a description of terminal behaviors which are significant.

6) Be carefully sequenced.

7) Have sequencing based on careful content analysis and testing.

8) Have an appealing format (i.e. linear may have more appeal than branching).

B. Advantages in using programmed material:

1) The student can work at his own pace.

2) Programmed material can instruct efficiently with little or no teacher participation.

3) Programmed material is useful not only for new material, but also for review or remedial work.

C. Disadvantages in the use of programmed materials:

1) There may be decreased contact between student and teacher.

2) Programmed learning can be a mechanical, unintellectual "lock-step" kind of learning.

3) Programmed material depends primarily on students' reading ability.

D. The instructor may increase learning by:

1) Providing follow-up material with student's participation.

Writing Behaviorally-Oriented Objectives

Module No. 2

Department of Vocational and Technical Education
University of Minnesota

March 1975

Table of Contents

	Page
Title Page	1
Introduction	2
Performance Objectives	3
References, Equipment and Materials Needed to Complete This Module	4
Learning Experience - Performance Objective and Directions	5
Supplements	
Learning Experience - Information Sheet	6
Learning Experience - Learning Activities	8
Learning Experience - Test	9
Learning Experience - Checklist	10
Module No. 2 - Teacher's Evaluation	11

Module No. 2 - Title Page

Writing Behaviorally-Oriented Objectives

Prerequisites: None

Directions: 1. a. Read the Introduction on p. 2.

b. Read the Performance Objectives on p. 3.

2. If you think you are prepared for the assessment without studying this module, see p. 9 for the test and p. 10 for the self-evaluation.

3. If you have successfully completed the test and self-evaluation, proceed to the next module.

4. If you were not successful or if you choose not to be assessed now, proceed with this module.

a. Read the References listed on p. 4.

b. Read the Learning Experience on p. 5.

Note: Your resource person is available to help you while you are studying this module.

Introduction

The purpose of this module is to guide you while studying what behaviorally-oriented objectives (or performance objectives) mean and how to write them. Many articles and even books have been written about different kinds of objectives. The reason for that is because the statement (or the identification) of what the students should be able to do at the end of instruction is not an easy task for any teacher. In the Information Sheet you will find several recommended resources to study.

Performance Objectives

Upon completion of this module, the terminal performance expected is expressed in the

Terminal Objective:

Using your occupational specialty you will write behaviorally-oriented objectives which will be meaningful and measureable.

The performance expected as a terminal objective is further clarified in

Enabling Objectives:

1. State the students' terminal performance derived from the goal of the instruction.
2. Describe the conditions under which the terminal performance will be done.
3. Develop the evaluating method of students' terminal performance which will include the level of acceptance.

References, Equipment and Materials Needed
to Complete This Module

1. Video tape: Designing a Vocational Course

2. Mager, R., and Beach, K. Developing Vocational Instruction. Palo Alto, California: Fearon Publishers, 1967.

3. Bjorkquist, D. What Vocational Education Teachers Should Know About Individualizing Instruction. In N. Frantz, Jr., (ed.), Individualized Instructional Systems for Vocational and Technical Education: A Collection of Readings. Athens, Georgia: Vocational Instructional Systems, 1974.

4. Pucel, D., and Knaak, W. Individualizing Vocational and Technical Instruction. Columbus, Ohio: Charles E. Merrill Publishing Co., 1975.

5. Mager, R. Preparing Instructional Objectives. Palo Alto, California: Fearon Publishers, 1962.

Learning Experience - Performance Objective and Directions

Objective

Using your occupational specialty you will write behaviorally-oriented objectives which will be meaningful and measurable.

Watch: Video tape "Designing a Vocational Course".

Read:
1. Learning Experience - Information Sheet, (part I on p. 6).
2. Mager, R., and Beach, K. Developing Vocational Instruction, (reference No. 2, pp. 28-34).
3. Bjorkquist, D. What Vocational Teachers Should Know About Individualizing Instruction, (reference No. 3, pp. 64-67).
4. Pucel, D., and Knaak, W. Individualizing Vocational and Technical Instruction, (reference No. 4, pp. 76-79).
5. Mager, R. Preparing Instructional Objectives, (reference No. 5, especially pp. 10-24, recommended, not required).
6. Learning Experience - Information Sheet, (part II on p. 6).

Practice: Follow the instructions in the Learning Activities on p. 8.

Evaluate:
1. Complete the self-administered test on p. 9 and the checklist on p. 10.
2. For your evaluation discuss your written answers with your resource person.
3. If you were successful in your evaluation, proceed to the next module.

Supplements

Module No. 2: Writing Behaviorally-Oriented Objectives

Learning Experience - Information Sheet

Part I. Introduction to your study

You will watch the video tape "Designing a Vocational Course", which will introduce you to how a vocational course is designed. You will need this information later on while studying Module No. 3 "Overview of Development and Planning for a Course". The most important for you now is to carefully follow the last part of the video tape, which explains what performance objectives mean and how to write them.

You will read several pages in the book written by Mager and Beach (1967) which deals with how to write the performance objectives for a course. After this reading you will gain information of how to develop performance objectives for individualized instruction from the article written by Bjorkquist (1974). In the book of Pucel and Knaak (1975) you will find a different approach to this problem and several examples of how to write the performance objectives for an occupational instruction program.

If you wish to improve more on your skills related to performance objectives, it is recommended that you can study the programmed textbook written by Mager (1962). Especially pp. 10-24 should be interesting for you.

Part II. Conclusion

After you have watched the video tape and read all pages described above, you will have learned about the performance objectives pretty well. You will have developed your own opinions and conclusions related to this topic.

While writing the performance objectives the most important thing to remember and follow is that the performance objectives consist of:

1. Statement of students' performance at the end of instruction (which was derived from the goal of that instruction).
2. Conditions under which the performance will be executed (e.g. what students will be given, in what environment the performances will be done, etc.).
3. The expected level of students' performance (which describes the method of evaluating of students' outcomes at the end of the instruction).

Every performance objective should contain these three parts regardless of whether or not it is written for an occupational program, course, course unit, lesson and for group or individually taught instruction.

Learning Experience - Learning Activities

After studying this module you should complete the following activities:

1. Write at least 10 verbs, suitable for your occupation, that express an action.

2. Select the performance statements from the list presented below which you think are behavioral in nature. Circle the letter beside each of them :

   a. Students will understand the function of a diesel engine.

   b. Students will know the parts of beef animals.

   c. Students will describe the key parts of a diesel engine.

   d. Students will identify the parts of a beef animal.

   e. Students will solve quadratic equations.

   f. Students will understand how to solve quadratic equations.

3. Try to write the statement of what students will perform at the end of instruction in your occupation derived from goal of your instruction.

   Note: realize that your students' goals can be very broad e.g. "to become a draftsman" or narrower e.g. "to prepare a soup" or very narrow e.g. "to measure voltage".

4. For each performance statement written in Learning Activities Item No. 3 list the conditions under which that performance will be executed.

5. For each students' performance stated in Learning Activities Item No. 3 put down the acceptable level of that performance.

   Note: You should check your performance with your resource person.

Learning Experience - Test

Answer in brief written form the following questions:

1. Describe the difference between a goal of instruction and a performance objective for that instruction. Give an example.

2. Select what you consider to be the best behaviorally stated objective which you prepared during the learning activities (No. 3, 4, and 5.). Write a statement describing how you will ascertain whether or not a student has accomplished this objective based on: 1) the performance statement, 2) the statement of conditions under which the terminal behavior will be performed, and 3) the level of performance specified in the objective.

After you have finished this test and the checklist on p. 10 , discuss your answers with your resource person.

Learning Experience - Checklist

Directions: You will use this checklist for your own evaluation. Please answer the following questions by circling one of three possible responses:

Do the performance objectives you wrote in the learning activities on p. 8.

1. express clearly your instructional intent? yes not certain no
2. include:
   a. performance statement? yes not certain no
   b. conditions under which performance would be executed? yes not certain no
   c. level of acceptance? yes not certain no

Level of Acceptance:

If you answered either no or not certain to any questions above, you will decide cooperatively with your resource person what resources recommended in this module you should study again.

Module No. 2 - Teacher's Evaluation

Teacher's evaluation of the learning process offered in this module.

Dear Colleague:

We would like to have some of your impressions of this module. We need these impressions for the evaluation of our program which you are now studying.

Would you, please, answer the following questions by circling one of three possible responses? Thank you for helping us.

The Program Authors

Evaluation of This Module

Questions			
Was this module interesting to you?	yes	not much	no
Was this module written clearly?	yes	not much	no
Was this module too short?	yes	not much	no
Was this module too long?	yes	not much	no
Was this module directed to the most important learning points only?	yes	not much	no
Did you understand the objectives of this module?	yes	not much	no
Did the books and/or articles recommended in this module			
a. relate to the content of this module?	yes	not much	no
b. help you in the achievement of objectives?	yes	not much	no
Did the video tapes, tapes and/or other aids recommended in this module			
a. relate to the content of this module?	yes	not much	no
b. help you in the achievement of objectives?	yes	not much	no
Did the learning activities			
a. relate to the content of this module?	yes	not much	no
b. help you in the achievement of objectives?	yes	not much	no
Were the test and checklist items			
a. worded clearly?	yes	not much	no
b. concentrated to the most important points of your learning?	yes	not much	no
Did the checklist help you in your evaluation?	yes	not much	no
Did you learn from this module what you had expected?	yes	not much	no

Your special comments:

What do you think should be improved in this module?

OVERVIEW OF DEVELOPMENT AND PLANNING FOR A COURSE

Module No. 3

Department of Vocational and Technical Education
University of Minnesota

March 1975

Table of Contents

	Page
Title Page	1
Introduction	2
Performance Objectives	3
References, Equipment and Materials Needed to Complete this Module	4
Learning Experience I - Performance Objective and Directions	5
Learning Experience II - Performance Objective and Directions	6
Learning Experience III - Performance Objective and Directions	7
Supplements	
Learning Experience I - Information Sheet	8
Introduction To a Course - Examples	10
Learning Experience I - Learning Activities	16
Learning Experience I - Test	17
Learning Experience I - Checklist	18
Learning Experience II - Information Sheet	19
Learning Experience II - Learning Activities	23
Learning Experience II - Test	24
Learning Experience II - Checklist	25
Learning Experience III - Information Sheet	26
Learning Experience III - Learning Activities	28
Learning Experience III - Test	29
Learning Experience III - Checklist	30
Module No. 3 - Teacher's Evaluation	31
Module No. 3 - Resource Material	34

Module No. 3 - Title Page

Overview of Development and Planning for a Course

Prerequisites: Completion of the following modules:

1. No. 1. - Audio-Visual Equipment and Materials
2. No. 2. - Writing Behaviorally-Oriented Objectives

Directions:

1. Be sure you have successfully completed all prerequisites.
2. a. Read the Introduction on p. 2.

   b. Read the Performance Objectives on p. 3.
3. If you think you are prepared for the assessment without studying this module, see pp. 17, 24, 29 for the test and pp. 18, 25, 30 for self-evaluation.
4. If you have successfully completed the test and self-evaluation, proceed to the next module.
5. If you were not successful or if you choose not to be assessed now, proceed with this module.

   a. Read the references listed on p. 4.

   b. Read the Learning Experience I on p. 5.

Note: Your resource person is available to help you while you are studying this module.

Introduction

The purpose of this module is to inform you how a course is developed and what to do before you start to teach a course.

The word "course" has several meanings. The definition of "course of study" by the American Vocational Association, Inc. (AVA) says:

> Course of study is an inclusive outline of the objectives, experiences, skills, projects, demonstrations, related information, and methods involved in teaching a school subject, covering a special period of time.

In some vocational schools the word "course" is used to describe the program to prepare for an occupational field e.g. cosmetology. In some other schools it means a subject in the preparation for an occupational field. Some examples are introduced on p. 10.

Whether you teach the whole occupational field like "Baking" or a smaller part of a field like the "Dental Materials", part of the program for "Dental Assistant", depends on your occupational field and the school's organization.

Regardless of how big a piece of instruction you teach, the rules for working with it are the same.

Performance Objectives

Upon completion of this module, the terminal performance expected is expressed in the

Terminal Objective:

Based upon the knowledge of how a course is designed you will plan for a course in your occupational field.

The performance expected as a terminal objective is further clarified in

Enabling Objectives:

1. Write the introduction to the course in your occupational field (Learning Experience I).
2. Plan for the course in your occupational field (Learning Experience II).
3. Plan for the individualized course in your occupational field (Learning Experience III).

References, Equipment and Materials Needed to Complete This Module

1. Resource material attached to this module: Definitions of Terms in Vocational, Technical and Practical Arts Education.

2. Video tapes: a) Designing a Vocational Course
   b) Planning a Vocational Course

3. Video tape playback deck

4. Mager, R., and Beach, K. Developing Vocational Instruction. Palo Alto, California: Fearon Publishers, 1967.

5. Pucel, D., and Knaak, W. Individualizing Vocational and Technical Instruction. Columbus, Ohio: Charles E. Merrill Publishing Co., 1975.

6. Bjorkquist, D. What Vocational Education Teachers Should Know About Individualizing Instruction. In N. Frantz, Jr. (Ed.), Individualized Technical Systems for Vocational and Technical Education: A Collection of Readings. Athens, Georgia: Vocational Instructional Systems, 1974.

Learning Experience I - Performance
Objective and Directions

Objective

You will write the introduction to the course in your occupational field.

Watch: Video tape "Designing a Vocational Course".

Read:
1. Some definitions of terms related to this module (e.g. definition of course, curriculum, vocational curriculum and others which you think will be useful for your teaching practice, (reference No. 1).
2. Mager, R., and Beach, K. Developing Vocational Instruction, (reference No. 4, pp. 10-24). and

   Pucel, D., and Knaak, W. Individualizing Vocational and Technical Instruction, (reference No. 5, pp. 63-73).
3. Learning Experience I - Information Sheet on p. 8.

Practice: Follow the instructions in the Learning Activities on p. 16.

Evaluate:
1. Complete the self-administered test on p. 17 and the checklist on p. 18.
2. For your evaluation discuss your written answers with your resource person.
3. If you were successful in your evaluation, proceed to the next Learning Experience.

Learning Experience II - Performance Objective and Directions

Objective

You will plan for the course in your occupational field.

Watch: Video tape "Planning a Vocational Course".

Read: 1. Learning Experience II - Information Sheet on p. 19.

Practice: Follow the instructions in the Learning Activities on p. 23.

Evaluate: 1. Complete the self-administered test on p. 24 and the checklist on p. 25.

2. For your evaluation discuss your written answers with your resource person.

3. If you were successful in your evaluation, proceed to the next Learning Experience.

Learning Experience III - Performance Objective and Directions

Objective

Based on your competency achieved in Learning Experience II, you will plan for the individualized course in your occupational field.

Read:
1. Learning Experience III - Information Sheet on p. 26.
2. Pucel, D., and Knaak, W. Individualizing Vocational and Technical Instruction, (reference No. 5). Required pages: 19-25. Recommended pages: 89-97, 97-129, 232-239.
3. Bjorkquist, D. What Vocational Education Teachers Should Know About Individualizing Instruction , (reference No. 6, pp. 64-73).

Practice: Follow the instructions in the Learning Activities on p. 28.

Evaluate:
1. Complete the self-administered text on p. 29 and the checklist on p. 30.
2. For your evaluation discuss your written answers with your resource person.
3. If you were successful in your evaluation, proceed to the next module.

Supplements

Module No. 3: Overview of Development and Planning for a Course

Learning Experience I - Information Sheet

You have watched the video tape "Designing a Vocational Course" in which the basic information about the development of a course has been presented.

Let us repeat the basic things only.

The request for a certain vocational course should be derived from the needs of society. The broad goal of that certain course is stated in terms of the intended outcome of the course, for example "to be an electrician".

Before the students' enrollment in the course it is necessary to inform them what the course is like. Some examples of course introductions can be seen on pp. 10-15. Notice the parts of the introduction.

Now the question is "How was the content of the course designed?"

It was based on a task analysis. What a task analysis means you have read in the books Mager (1967) and Pucel (1975).

In the video tape you have seen that the content of the occupation e.g. "Coffee Shop Food Preparation" was divided into major work areas or "blocks of duties":

To cook on a range
Bake pastries
Prepare fowl etc.

Each of these blocks was divided into smaller parts called "duties". The block "To cook on a range" can be divided into these duties:

Preparing soup
Preparing hot dishes
Preparing eggs, etc.

While watching the video tape you heard the definition of tasks: "Taks are necessary steps which need to be done before one can complete the larger piece of work or activity called a duty."

For example: Duty: Preparing soup

Tasks: Selecting ingredients
Cleaning vegetables
Chopping vegetables
Simmering together

You have read the definition of a task in Mager (1967): "A task is a logically related set of actions required for the completion of a job objective. Stated another way, a task is a complete job element."

Mager's definition is not consistent with the video taped definition written above. If you recall what you have read in Mager (1967), and Pucel (1975), you will notice that the principle of breaking down the requested content of an occupation is the same. The only problem is that the terminology is not standardized.

The important thing is the completeness of tasks in the proper sequence. In the example above, the sequence was developed by answering the question "What is the first (second, third, etc.) step in preparing soup?"

The tasks and related performance objectives should identify <u>what knowledge, skills and attitudes the students have to learn</u> in the course.

Introduction To a Course - Examples

1. Cosmetology, Minneapolis Area Vocational Technical School, p. 11.
2. Electro-Mechanical Technology, St. Paul Area Technical Vocational Institute, p. 12.
3. Auto body, Kelsey Institute of Applied Arts and Sciences, Saskatoon, Canada, p. 15.

MINNEAPOLIS AREA VOCATIONAL TECHNICAL SCHOOL
1101 Third Avenue So., Minneapolis, Minn. 55404

COSMETOLOGY

General Description

Cosmetology is the care and beautification of the hair, skin and nails which includes the shaping, styling, permanent waving and coloring of hair, scalp and hair treatments, facials, make-up and manicuring. After the satisfactory completion of 1500 hours of training, both a written and a practical examination are given by the Minnesota State Board of Hairdressing and Beauty Culture. A license is issued by the Board to those who obtain acceptable grades.

Types of Employment in Industry

As a cosmetologist enters the profession she usually performs a variety of services or may be an assistant to a hair stylist. An experienced cosmetologist may specialize, becoming a hair stylist, a hair coloring technician, or a make-up artist. Those interested in supervision and salon operation may work as managers in large salons, own their own shops, or be employed as instructors in beauty schools. Occupations such as demonstrator and representative for a manufacturer of cosmetics or beauty shop equipment include travel opportunities. Salaries compare favorably with those in other professional fields. Cosmetologists work a five day week.

Length of Course

Approximately ten months: The course starts the last week in July. Students are in class eight hours a day.

Entrance Requirements – A student needs to have a liking for people, an interest in good grooming, finger dexterity, good coordination, sales ability, good health and freedom from allergies. Because the practical work is based on theory which is science oriented, students need to be able to understand and remember this kind of subject matter. Biology, chemistry and other science courses offered in high school provide helpful background information. Students submit an application and a transcript of high school records. The State Board requires that a health history form, completed by a physician and notarized, be submitted by an accepted student on the first day of class attendance. Training hours cannot be counted until the health history form is turned in to school and is filed with the State Board. At the beginning of training, students work on mannequins and on each other. They must be willing to do this in order to gain experience before working on patrons. Students provide white uniforms and shoes and buy a kit of personal equipment costing $50.00.

Brief Outline of Course Includes Theory and Practical Work in:

- Sanitation and Sterilization
- Dermatology
- Trichology
- Electricity
- Light Ray
- Anatomy
- Facial Treatments
- Eyebrow Arching
- Manicuring
- Shampoos and Rinses
- Scalp Treatments
- Hair Coloring
- Hair Bleaching
- Lash and Brow Tinting
- Hair Cutting
- Hair Styling
- Care and Styling of Wigs
- Permanent Waving
- Chemical Hair Relaxing
- Business Management
- Minnesota Hairdressing and Beauty Culture Laws

High school students may make application upon completion of the first semester in the senior year.

St. Paul Area Technical Vocational Institute

GENERAL INFORMATION

Public Area School – The Institute is a part of the St. Paul School system and serves the residents of the St. Paul area and the State of Minnesota. It meets standards established by the Minnesota State Plan for Technical Vocational Education and is approved for the instruction of veterans, orphans of war veterans, State and Federal rehabilitation students, technicians for national defense and manpower needing training or retraining to meet the changing needs of industry.

Student Enrollment – The median age of the student body is eighteen years and six months. Most students are high school graduates. Placement in a particular program is preceded by the counseling process which brings the student into focus with his interests, abilities, physical assets and attitude toward learning. Appraisal of the student's progress is made quarterly. Unsatisfactory progress may necessitate a change of objective.

Length of Courses – Courses vary in length (See inside of brochure). The full time day program is based on a seven hour day – 8:00 A.M. - 3:30 P.M. Student progress and time required to complete the courses will be determined by variable factors – previous schooling, capacity to learn, motivation, work habits and economic welfare. All students pursuing a diploma of graduation must complete the required curriculum. This will make them highly desirable and useful employees in their chosen occupations and will enable them to meet standards of industry for entry employees.

Tuition Free – Minnesota residents meeting minimum requirements may attend tuition-free until they reach age 21. If their twenty-first birthday occurs during the school year – September to August – they may complete the school year without paying tuition.

Veterans Affairs – Veterans or sons and daughters of veterans who believe they are entitled to any educational benefits administered by the Veterans Administration should apply directly to the regional office of Veterans Administration at Fort Snelling for Certificate of Eligibility. The Institute counseling office is in touch with the Veterans Administration and will assist students in processing the various forms. State law no. 89-358 entitles Minnesota Veterans who entered service prior to age 21 and who made application to attend school within two years of their discharge from the service or before their 29th birthday to attend any Minnesota area school tuition free.

Tuition Charge – All students 21 years of age by September 1 must pay tuition. Tuition rate is set each year by the St. Paul Board of Education.

Housing: Non-Residents – Student dormitories are not available. Arrangements for housing should be made on an individual basis. Students coming to St. Paul may find living accommodations at the YMCA or YWCA which are within walking distance of the school.

Placement Service Without Charge – The coordinator for the school assists the graduates in finding placement. He makes follow-up visits to facilitate satisfactory employer-employee relations. The coordinator is in continuous communication with trade and industry. Additional placement services are provided through cooperation with Minnesota Manpower Services.

Admissions –

High School Students in senior year contact the counselors in their respective schools for admission information.

High School Graduates, Adults and Other Interested Applicants should come in and take the preplacement tests which are administered the first Monday of each month at 8:00 a.m. and the second Monday of each month at 6:00 p.m. (If a holiday should fall on one of these Mondays, the testing date automatically moves up to the following Monday.) An interview is scheduled at the time of testing for a later date.

Admissions of Deaf Students – Services for deaf students have been through a special project of the U.S. Department of Health, Education and Welfare. Students who have hearing losses which restrict their opportunities for success in regular post-high school programs will receive supportive services including special preparatory classes, remedial instruction, tutoring, counseling and interpreting services. Students must contact a Vocational Rehabilitation Counselor. (Areas not having Counseling Service, call or write TVI) Referral Information should include transcripts, test information, audiological and otological information. It is highly desirable that complete psychological and vocational evaluations be obtained from an appropriate rehabilitation facility. (Sample evaluations are available upon request.) This special program for deaf students will serve students from Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, plus surrounding states and Canada as appropriate.
Communications should be directed to program for deaf students.

Manpower Program – The Manpower Developmental Training Program is a cooperative effort by the St. Paul Board of Education, the Department of Manpower Services, and St. Paul TVI. The Manpower Developmental Training Act provides training in occupational categories where shortages of qualified personnel exist. These programs provide an opportunity for qualified students to develop individual skills in the area of their interest. If you qualify for this program you may receive financial aid. To qualify you must be unemployed or underemployed. For more information regarding training and eligibility for training please contact your local Department of Manpower Services before making formal application at TVI.

FURTHER INFORMATION – Phone 1-612-227-9121 or write Admissions Office, St. Paul Technical Vocational Institute, 235 Marshall Ave., St. Paul, Minnesota 55102.

ELECTRO MECHANICAL TECHNOLOGY

Nature of the Work

The Electrical Mechanical Service Technician is able to install, service and maintain moving electrical mechanical equipment. In the mechanical area he is familiar with methods of power transmission by moving belts, gear transmissions, variable pulleys, dry, fluid and spring clutch mechanisms. Knowledge of water pumps and valves, air switches, hydraulic thermostats, solenoid valves and timer controls along with gas valves, pressure regulators and manual controls are a necessary part of his service capabilities.

In the electrical area he is called upon to diagnose and repair or replace components such as timers, switches, relays, heaters, and circuit protectors.

A technical knowledge of gas and pressure systems, refrigeration theory, solid state trouble shooting and ability to circuit-trace also assist his advancement in the service field.

Employment Opportunities

Employment opportunities lie in several different areas:

"Home Field Service" includes repair and maintenance, in the home, of laundry and kitchen appliances, home refrigeration, air conditioning and heating.

"In-Shop Service Work" may include repair or assembly of such devices as transmissions, timing mechanisms, and other subassemblies of major equipment. Job titles associated with such work are Laboratory Technician or Laboratory Assistant.

Related areas of work may include receiving or sales of parts and equipment necessary for repairs, customer relations, and positions bearing titles such as Factory Service Representative, or Field Service Trainer.

Additional pay is usually available in overtime and premium pay during peak work loads. Lay-offs because of slack work loads are practically nonexistent.

Qualifications

The student must be able to work well with his hands and be in good health. He should have an aptitude for math, and algebra. Neat handwriting, and a neat appearance, along with a pleasant personality are essential traits for those working people.

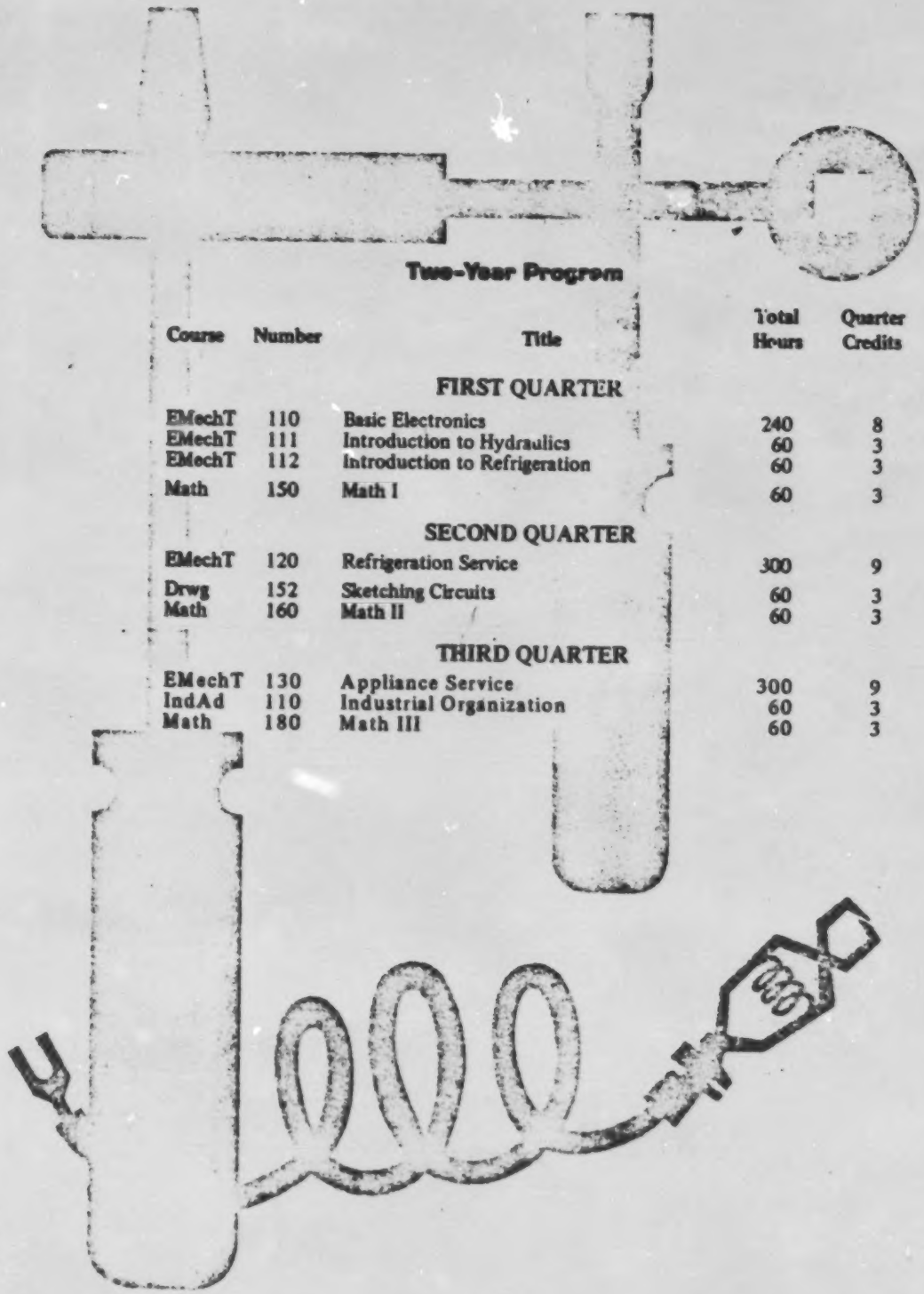
The student should be able to work well with and without supervision, and have good command of his senses. Accurate color vision is essential. Good reading ability is very helpful.

Course of Study

The student, through shop assignments and study guides, along with self-study courses, develops ability in circuit tracing and analysis.

Cost of Materials

Student should have about $100 for tools and text.



Two-Year Program

Course	Number	Title	Total Hours	Quarter Credits
		FIRST QUARTER		
EMechT	110	Basic Electronics	240	8
EMechT	111	Introduction to Hydraulics	60	3
EMechT	112	Introduction to Refrigeration	60	3
Math	150	Math I	60	3
		SECOND QUARTER		
EMechT	120	Refrigeration Service	300	9
Drwg	152	Sketching Circuits	60	3
Math	160	Math II	60	3
		THIRD QUARTER		
EMechT	130	Appliance Service	300	9
IndAd	110	Industrial Organization	60	3
Math	180	Math III	60	3

Kelsey Institute of Applied Arts and Sciences, Saskatoon, Canada

AUTO BODY

Length of Course	**28 Weeks**
Term	**Sept. 3, 1974 to March 27, 1975**
Admission Requirements	**Grade X, at least 17 years of age.**
Tuition	**$154.00**

STAFF:

A. Wood, Jny. (Auto Body), Program Head
D. Chudy, Jny. (Auto Body)
L. Janzen, Jny. (Auto Body)
P. Wiasenko, Jny. (Auto Body)

Training will include theory and practice in each of the phases of auto body repair. The student should develop skills in the use of metal working hand tools, welding, frame straightening, wheel alignment, painting and upholstery equipment.

UNITS OF INSTRUCTION

Welding — fusion, bronze, spot and arc welding automotive metal, cutting, welding aluminum and silver soldering.

Basic Metal Work — threading, filing, cutting, bending, raising, shrinking, grinding, solder and cold filling, and fibre glass repair.

Collision Repairs — estimating; repairing fender, front end and side; aligning body shell, fitting windows and windshield, electrical maintenance.

Panel Replacements — dismantling, servicing and aligning deck and door assemblies, door and quarter panels.

Refinishing — preparing materials, sanding, feather-edging, masking, priming, mixing and matching, spraying and force drying.

Trim and Upholstery — removing and installing trim, cleaning upholstery, sewing and cementing fabrics; removing, sealing and installing glass.

Frame Repair and Alignment — repairing damaged frame horns; swayed, mashed, sagged and twisted frames, steering alignment and wheel balancing.

FINANCIAL ASSISTANCE

(a) the Canada Department of Manpower and Immigration through the Canada Manpower Centres may, under certain conditions, assist students with training costs and in some instances provide training allowances while enrolled in approved courses of not more than one year's duration. For eligibility and further details contact your nearest Canada Manpower Centre.

(b) **Saskatchewan Student Loans Plan**: Loans may be available under this plan to students requiring financial assistance. Application forms are available from:

Student Assistance Section,
Department of Continuing Education,
540 Midtown Centre,
REGINA, Saskatchewan
S4P 3K2

Learning Experience I - Learning Activities

After studying this Learning Experience you should perform the following activities:

1. Review given examples of a course introduction presented on pp. 10-15.
2. Put down the parts of a course introduction.
3. Develop your own course introduction format.
4. Write the introduction to the course in your occupation. Adjust the format and text of your introduction to the writing style being used in your particular school. You are encouraged to think out any improvements you can make in the course introduction.
5. Discuss your course introduction with your resource person. Do the corrections you both agreed on.

Learning Experience I - Test

Complete the following test item:

Present corrected introduction to your course which you prepared while practicing (Learning Experience I - Learning Activities on p. 16).

After you have finished this test and the checklist on p. 18, discuss your responses with your resource person.

Learning Experience I - Checklist

Directions: You will use this checklist for your own evaluation. Please answer the following questions by circling one of three possible responses:

1. Did you include every necessary part for your course introduction? yes not certain no

2. Did you adjust your course introduction to the format being used in your school? yes not certain no

3. Did you write your course introduction clearly and briefly? yes not certain no

4. Did your course introduction include any improvements over the one being used in your school? yes not certain no

Level of Acceptance:

If you answered either no or not certain to any question above, you will decide cooperatively with your resource person what you should study again.

Learning Experience II - Information Sheet

You were introduced to the design of a course in Learning Experience I. You will probably not design a total course, but rather you will be given the content of the course you should teach.

While planning for the course you have to keep in mind the following three questions, which you already heard while watching video tapes "Designing a Vocational Course" and "Planning a Vocational Course":

1. What should the students learn in the course?
2. How should they learn?
3. How will you evaluate their levels of achievements in the course?

Before you start to teach the course, you should proceed by the following steps:

1. You should realize the broad goal of your course, answering the question:
   "What are the final aims of my students after having completed the course"?
   The answer could be:
   "To be prepared for an employment e.g. as an electronic technician or hairstylist, etc.".
2. You should review the content of the particular course according to your own job experiences.
3. a. If the content is divided into certain duties blocks, duties, and tasks, you should review whether all duties and tasks which the students would need in their jobs are included.
   b. If the content is not broken down, you have to do it in a way similar to which it was done in Learning Experience I.
4. You should review the sequence of tasks.
5. You should group the tasks into course units and lessons.

6. You should write the performance objectives for every course unit . "A course unit is a major part of a course. It includes several lessons".

7. The following step is very important in your planning for a course. To help your students fulfill their goal, you will state what they should PERFORM after having completed the course. You should also state the conditions under which their performance will be executed. These statements are two parts of the PERFORMANCE OBJECTIVES of your course. The third part which is the evaluation of outcomes you will prepare later in step 9.

When you prepared all steps presented above you have stated WHAT the students should learn in the course.

8. Now the question is HOW the students should learn.

To answer this question you have to state the conditions of their learning.

Review the list of equipment, tools, literature and other aids to be used in the course. Also be sure that the working conditions in workshops are similar to real ones in the work field. Carefully prepare the other teaching-learning conditions not only in the workshop but in the classroom as well.

Design the teaching methods for your course. You can briefly describe the teaching methods for each course unit. They will be specified while planning for particular lessons.

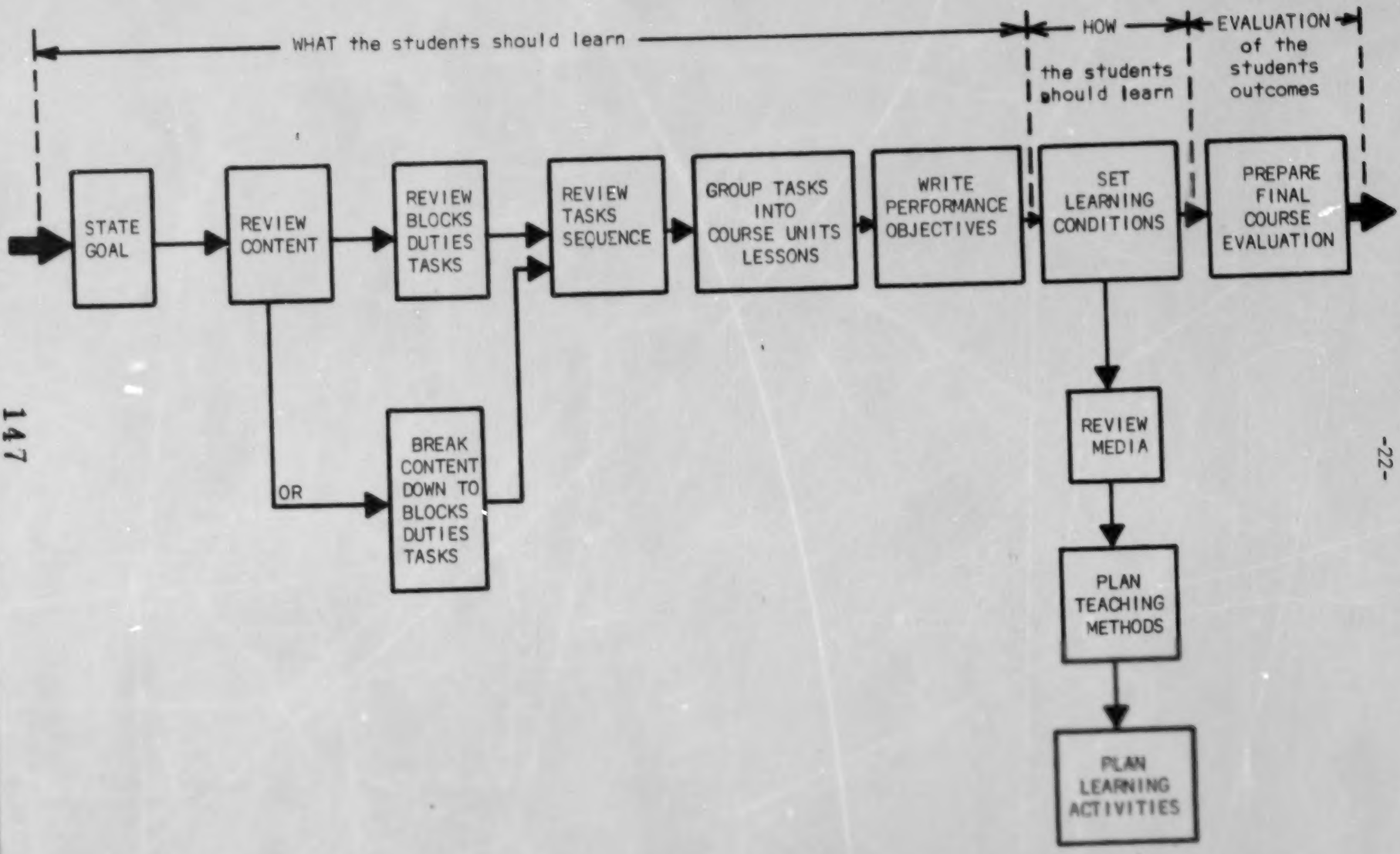
9. The last step in planning for a course is the final evaluation of the course. You already prepared partial evaluation of the outcomes while writing the performance objectives for course units. Now you should prepare the final examination of your students which would show what competencies the students have achieved and how well they did after

completing the course. You will measure their final performance by stated level of acceptance.

10. After you have done all these nine steps you should present the most important of them to your students. You can do it in the Introduction to the course. It is very important for the students to know what the course is like and what they will be able to perform at the end of the course. Also, the level of their performance will be of interest to the students.

Conclusion:

The summary of what you have learned in Learning Experience II you can see on Block Diagram on p. 22.



BLOCK DIAGRAM: Planning for Vocational Course

Learning Experience II - Learning Activities

After studying this Learning Experience you should perform the following activities:

1. Follow the steps presented in Block Diagram on p. 22 which means:

   a. Put down the goal of the course in your occupation.

   b. Prepare the task list in proper sequence.

   c. Group the tasks into course units and lessons.

   d. Write the performance objectives for course units.

   e. State what the students should perform at the end of course. State the conditions of their performance.

   f. Set the conditions of the teaching-learning process by following the steps presented in Block Diagram under the block "Set Conditions".

   g. Prepare the evaluation of what the students should perform at the end of the course

   Write every part of the course on a separate page. Keep your writing brief and clear.

2. Develop the format of the course plan consistent with that being used in your school. You are encouraged to include in the format some new ideas and improvements.

3. Put the course parts worked out in the activities item 1 in the format developed in the activities item 2.

4. Discuss your plan for a course with your resource person. Do the corrections you both agreed on.

Learning Experience II - Test

Answer the brief written form test item No. 1.

Do test item No. 2.

Test items:

1. What are the basic ideas in planning any teaching-learning process?

2. Present corrected plan for the course which you prepared while practicing (Learning Experience II - Learning Activities p. 23).

After you have finished this test and the checklist on p. 25, discuss your responses with your resource person.

Learning Experience II - Checklist

Directions: You will use this checklist for your own evaluation. Please answer the following questions by circling one of three possible responses:

1. Did your written course plan include:

   a. The goal of the course? yes not certain no

   b. The task list in proper sequence? yes not certain no

   c. The tasks grouped into course units and lessons? yes not certain no

   d. The performance objectives which contained:

      the statement of the students performance? yes not certain no

      the conditions under which performance will be executed? yes not certain no

      the evaluation of outcomes? yes not certain no

   e. The teaching-learning conditions? yes not certain no

2. Was the developed format of a course plan consistent with that being used in your school? yes not certain no

3. Did the developed format include any improvements over the format being used in your school? yes not certain no

Level of Acceptance:

If you answered either no or not certain to any question above, you will decide cooperatively with your resource person what you should study again.

Learning Experience III - Information Sheet

Some vocational schools emphasize individual learning using self-pacing learning packages. Other vocational schools prefer group teaching with some individualized attention. In your teaching practice you will teach the students using both group and individualized methods.

If you are a teacher in a vocational school that prefers group teaching, you should use the individualized approach with every student especially while he is practicing his skills in a workshop. You should be prepared for the possibility that your school might soon switch to complete individualization of the learning process. The main reason for this switch is that every student has a different ability to learn and is already adjusted to different types of learning. If you wish, you can read more about these problems in Pucel (1975) pp. 89-97.

For your accomplishment of this module you should read the article in the book Frantz (1974) pp. 64-73 and Pucel (1975) pp. 19-25.

If you are a teacher in individualized vocational school, you will need basic group teaching strategy also. You will deal with the students in a group giving them some basic information about a course they have chosen. You will also give them information about learning from self-learning packages and about learning from demonstrations, etc. You can use knowledge and skills you have already gained while studying about group teaching methods. The reading assignments for you are the same as is written above. The purpose of this module is not intended to teach you how to write learning packages. If you are interested in that kind of writing, you may wish to read Pucel (1975), p. 97-129 and p. 232-239 and to contact your supervisor.

You have successfully studied in Learning Experience I and II how a course was developed and how to plan for a course. If you look at the Block Diagram on

p. 22 of this module again, you will notice that the procedure of how to plan for an individualized course will be basically the same. The differences are as follows:

1. The students will learn mainly by utilizing the learning packages in the course. If individualized learning packages are used, the teacher should be as familiar with these as the students are. You should know the content of the learning packages well.

2. You should prepare the introduction to the course which would include the course objectives, the explanation of how to work with learning packages, the explanation of the organization of the course work, and the explanation of the students' evaluation.

3. The students will proceed in the course at their own pace, of course with some time limitation. In some schools the students can be enrolled in the course at almost any time. While planning for the course you should realize this time frame which will certainly require careful organization in the use of workshops, working places, equipment, tools, machines, etc.

Learning Experience III - Learning Activities

After studying this Learning Experience you should perform the following activities:

1. Ask your experienced colleague teacher if you may visit his instruction where the learning packages or other individualized methods are used. Put down a few notes about your observation related to

   a) the organization of the instruction.

   b) the teacher's and students' activities.

   c) the use of materials and audio-visual aids.

   d) your colleague's preparation for the instruction.

2. Look again at your plan for the course you prepared while studying the Learning Experience II. Based on this plan, on your knowledge already gained, and on your observation of the individualized learning process, try to prepare the plan for the individualized course.

3. Discuss your learning activities in item No. 1 with resource person to be sure that you have done them well.

4. Discuss your plan for a course with your resource person. Do the corrections you both agreed on.

Learning Experience III - Test

Answer in brief written form test items No. 1 and 2.

Do test item No. 3.

Test items:

1. What are the advantages and disadvantages of group and individualized instruction?

2. If you already teach by the use of learning packages, put down several critical comments related to the occupational and pedagogical value of them.

3. Present corrected plan for an individualized course which you prepared while practicing (Learning Experience III - Learning Activities p. 28).

After you have finished this test and the checklist on p. 30, discuss your responses with your resource person.

Learning Experience III - Checklist

Directions: You will use this checklist for your own evaluation. Please answer the following questions by circling one of three possible responses:

While planning for the individualized course:

1. Did you plan the organization of your course regarding variable time for students' learning process? yes not certain no

2. Did you prepare the introduction to the course which included:

   a. the course objectives? yes not certain no

   b. the hints for working with the learning packages? yes not certain no

   c. the methods of the students' evaluation? yes not certain no

3. Did you prepare the list of resources? yes not certain no

Level of Acceptance:

If you answered either no or not certain to any question above, you will decide cooperatively with your resource person what part of this module you should study again.

Module No. 3 - Teacher's Evaluation

Teacher's evaluation of the learning process offered in this module.

Dear Colleague:

We would like to have some of your impressions of this module. We need these impressions for the evaluation of our program which you are now studying.

Would you, please, answer the following questions by circling one of three possible responses? Thank you for helping us.

The Program Authors

Evaluation of This Module

Questions	Answers		
Was this module interesting to you?	yes	not much	no
Was this module written clearly?	yes	not much	no
Was this module too short?	yes	not much	no
Was this module too long?	yes	not much	no
Was this module directed to the most important learning points only?	yes	not much	no
Did you understand the objectives of this module?	yes	not much	no
Did the books and/or articles recommended in this module			
a. relate to the content of this module?	yes	not much	no
b. help you in the achievement of objectives?	yes	not much	no
Did the video tapes, tapes and/or other aids recommended in this module			
a. relate to the content of this module?	yes	not much	no
b. help you in the achievement of objectives?	yes	not much	no
Did the learning activities			
a. relate to the content of this module?	yes	not much	no
b. help you in the achievement of objectives?	yes	not much	no
Were the tests and checklists items			
a. worded clearly?	yes	not much	no
b. concentrated to the most important points of your learning?	yes	not much	no
Did the checklists help you in your evaluation?	yes	not much	no
Did you learn from this module what you had expected?	yes	not much	no

Your special comments:

What do you think should be improved in this module?

Module No. 3 - Resource Material

University of Minnesota
Department of Vocational and Technical Education

Definitions of Terms in Vocational, Technical, and Practical Arts Education

The following terms are from the American Vocational Association's publication, Vocational-Technical Terminology, March 1970.

Accountability

— A process applied to a program which parallels and is used in conjunction with financial accounting. Expected outcomes of the learning experience are pre-stated in terms permitting pre-and post-testing to determine the extent to which objectives have been achieved, and to permit a comparison of costs and benefits of various approaches to instruction. Stated objectives are expected to be realistic within legal, fiscal, and resource constraints; and, to reflect current population needs for occupational preparation, and current manpower and job requirements.

Accreditation

-- A process whereby an organization or agency recognizes an institution or program of study as having met certain pre-determined qualifications or standards. The process normally includes the setting of standards, a self-study by the institution or program, examination by a team of outside specialists, a decision by an independent accrediting commission, and publication of a list of accredited institutions or programs.

Institutional accreditation covers an institution as a whole. Programmatic accreditation covers a specific program such as law or nursing.

Accreditation by an agency recognized by the U.S. Commissioner of Education confers eligibility for a variety of federal benefits.

Advisory committee

— A group of persons, usually from outside the field of education, selected because of their knowledge and expertise in certain areas to advise educators regarding vocational programs. Such committees can operate at the federal, state and local levels and often function under names other than that of advisory committee.

Agricultural education

-- Usually refers to the curriculum in a college or university structured to prepare and assist teachers of agriculture in secondary schools. Sometimes used synonymously with the term vocational agriculture.

Agricultural occupation

— An occupation involving knowledge and skills in agriculture. The primary agricultural instructional areas which will also serve for classifying agricultural occupations are: agricultural production, agricultural supplies, agricultural mechanics, ornamental horticulture, agricultural resources, and forestry.

Agricultural mechanics shop

-- a school shop, properly designed, having necessary equipment and adequate supplies to make possible an instructional program to meet the mechanical, structural, power and other needs of the farm, farm home, and other agricultural occupations which require mechanical skills.

Agricultural occupations

-- occupations involving knowledge and skills in agricultural subjects have the following characteristics: (a) on a farm or in another business, agency, or organization which performs one or more of the agricultural functions of producing, processing, distributing, and servicing farm products, (b) employs workers who need competencies in one or more of the primary areas of plant science, soil science, animal science, farm management, agricultural mechanization, and agricultural leadership. Examples include occupations which deal with: agriculture, forestry, park, and recreational area managers; processing food, feed, tobacco, and related products; selling farm and garden equipment and supplies; gardening landscaping, and groups keeping; farm irrigation; soil and water management technicians; forestry conservation; repair of agricultural machinery, horticultural farming; servicing agricultural production.

All-around mechanic

-- an industrial term used to designate a training individual possessing the skills and knowledges necessary to do practically all of the jobs within a specified trade or occupation.

American Vocational Association, Inc.

-- the national, professional organization of teachers, administrators, supervisors, and teacher-educators engaged in the various phases of vocational, technical, and practical arts education. Its objectives are the promotion, improvement, and protection of sound vocational, technical, and practical arts education programs and the professional advancement of its members.

Applied art

-- an area of study dealing with the principles of art as related to the planning, designing, manufacturing, or arrangement of such commodities as clothing, shelter, household furniture, and equipment.

Apprentice training

-- an organized system for providing young people with the manipulative skills and technical or theoretical knowledge needed for competent performance in skilled occupations. The program usually involves cooperation among school, labor, and management, since apprentices learn the skills of the craftsman through on-the-job work experiences and the related information in the classroom. The minimum terms and conditions of apprenticeship are regulated by state and local statutes or agreements.

Area vocational school or program

-- a school or program involving a large geographical territory usually including more than one local basic administrative unit. It offers specialized training to high school students, who are preparing to enter the labor market. It also provides vocational or technical education to persons who have completed or left high school and are available for full-time study. These schools are sponsored and operated by local communities or by the state.

Avocational interests

-- those pursuits or hobbies which are distinct from the regular work or occupation of the individual and which are followed for recreational purposes.

Business education

-- a program of instruction which consists of two parts: (a) office education, a vocational education program for office careers through initial, refresher, and upgrading education leading to employability and advancement in office occupations, and (b) general business education, a program to provide students with information and competencies which are needed by all in managing personal business affairs and in using the services of the business world.

Certificate of completion (certificate of training)

-- written recognition granted to members of vocational classes upon satisfactorily completing the requirements of a course of instruction. Such certificates are presented when courses are not taken for credit towards graduation.

Citizens committee

-- this term is used extensively in agricultural education in referring to advisory committees.

Community college

-- a junior college operated by the board of education of a local basic administrative unity (including the independent local board for one or more community colleges). Instruction is adapted in content, level, and schedule to the needs of the local community.

Comprehensive high school

-- a secondary school with a number of departments(e.g., academic, industrial, business) offering a diversified program to meet the needs of pupils with varying interests and abilities.

Consultant

-- a recognized expert (not vested with administrative authority) in a specialized field whose advice is sought in the improvement of a program of education and/or its facilities.

Cooperative education

-- a program for persons who are enrolled in a school and who, through a cooperative arrangement between the school and employers, receive part-time vocational instruction in the school and on-the-job training through part-time employment. It provides for alternation of study in school with a job in industry of business, the two experiences being planned and supervised by school and employer so that each contributes definitely to the student's development in his chosen occupation. Work periods and school attendance may be on alternate days, weeks, or other periods of time, but the hours at work are during the school day and equal or exceed the hours spent in school during the regular school year. This plan of training is used extensively in various phases of vocational education.

Coordinating teacher (teacher-coordinator)

-- a member of the school staff who teaches the related and technical subject matter involved in work experience programs and coordinates classroom instruction with on-the-job training.

Coordinating (cooperative education)

-- a member of the school staff responsible for administering the school program and resolving all problems that arise between the school regulations and the on-the-job activities of the employed student. The coordinator acts as liaison between the school and employers in programs of cooperative education or other part-time job training.

Counselor, guidance

-- an experienced and trained person who helps another individual to understand himself and his opportunities, to make appropriate adjustments, decisions, and choices in the light of his unique characteristics, and to initiate a course of training or work in harmony with his selection.

Course of study

-- an inclusive outline or guide of the objectives, experiences, skills, projects, demonstrations, related information, and methods and evaluation involved in teaching a school subject, covering a specified period of time.

Craft advisory committee

-- a group of local craftsmen, selected from a specific trade or occupation, appointed to advise the school on matters pertaining to teaching the particular occupation. Generally, the committee should include an equal number of representatives of labor and management.

Curriculum

-- the series of courses designed to cover the instruction in a designated field. It may refer also to the whole body of courses offered in an educational institution.

Curriculum laboratory

-- an area especially equipped with desks, chairs, reference books, duplicating equipment, and other facilities needed by persons designated to develop courses of instruction and special types of teaching materials.

Day trade classes

-- courses conducted for persons regularly enrolled in a full-time school who have selected a trade or industrial pursuit and who wish to prepare for useful employment in the occupation. Training is comprehensive and includes instruction in manipulative processes and also in those technical and other related subjects which are needed by the skilled and competent worker.

Demonstration plot

-- a plot of ground used for instructional purposes in the field of agriculture. It is used for demonstration purposes and to show in a realistic way various practices, procedures, and techniques in agriculture.

Directed practice (student teaching)

-- a teaching assignment to enable the student teacher to acquire skill in teaching methods under the direction of a supervising teacher.

Distributive education

-- a program of instruction in marketing, merchandising, and management. The program is concerned with training needed for purposes of updating, upgrading, career development, and operational management.

Distributive Education Clubs of America

-- the national organization for students enrolled in distributive education classes. The club is an integral part of the instructional program. It provides opportunity for leadership, scholastic development, vocational competence, civic awareness, competition, economic understanding, organizational training, and further develops a professional attitude toward careers in retail, wholesale, and service occupations.

Distributive occupations

-- those occupations followed by propriators, managers, or employees engaged primarily in marketing or merchandising of goods or services. Such occupations are found in various business establishments, including, without being limited to, retailing, wholesaling, manufacturing, storing, transporting, financing, and risk bearing.

Diversified occupations program

-- a high school course in which students are given supervised work experience in any one of a variety of occupations, combined with related classroom instruction. This type of program is suited especially to communities where the need for workers is too limited to justify separate courses for each occupation. This program is usually under the direction of the trade and industrial education division and supervised by a teacher coordinator.

Evaluation

-- a term used in education indicating the procedure for determining the effectiveness of instruction.

Evening school

-- an institution that offers an organized program of courses for the convenience of adult students. Classes are held during the non-working hours of employed persons.

Executive officer of the state board for vocational education

-- the legally designated state official directly responsible to a state board for vocational education for the administration of the policies of vocational education determined by the board.

Exploratory courses

-- school subjects designed to provide the student with a broad, general, over-all view of the knowledges and skills involved in a field of learning or an occupation. Courses which provide students with exploratory and introductory experiences in a wide range of occupations serve as an aid in choosing a vocation.

Family life education

-- an educational program concerned with the improvement of family living. It may involve many educational subject fields such as homemaking, health, social studies, and many different groups such as the schools, clubs, community agencies.

Field trip

-- a planned visitation by a group of students to some farm organization or establishment outside the classroom for the purpose of observing and seeking firsthand information about its operation or of acquiring skills and experiences not possible in the classroom.

Fitzgerald Act

-- the National Apprenticeship Law enacted in 1937 "to promote the furtherance of labor standards of apprenticeship...bring together employers and labor for the development of programs of apprenticeship and to cooperate with state agencies in the formulation of standards of apprenticeship." The act is administered by the Bureau of Apprenticeship and Training, U.S. Department of Labor.

Follow-up study, vocational

-- a survey to determine what occupations the students and graduates of vocational education courses enter and how effective their training was in relationship to actual needs of the job.

Future Farmers of America

-- a national organization of students who are enrolled in agricultural education classes in the public secondary schools of the nation. It is an integral part of the instruction in agricultural education and is provided for in the George-Barden and subsequent National Vocational Education Act. It was incorporated by the 81st Congress in 1950. The foundation upon which the FFA is built includes leadership ad character development, sportsmanship, cooperation, service, thrift, scholarship, improved agriculture, organized recreation, citizenship, and patriotism.

Future Homemakers of America

-- the national organization of students studying home economics in public and private secondary schools. This youth organization provides opportunities for developing leadership abilities, for preparing youth to participate in community organizations, and for developing individual and group initiative in planning and carrying out activities related to the home. On the local, state, and national levels it operates through the framework of the home economics education program of the secondary schools.

General industrial course

-- a class organized to give specific preparation for an occupation in a group where shop instruction in several closely allied trades is conducted simultaneously. Courses may be organized to give preparation for one or more production jobs that do not fall into the trade classificaiton.

General shop course

-- a multi-activity program in industrial arts.

General unit shop

-- a school shop confined to industrial arts education within a family of occupations such as metalworking, woodworking, or electricity. For example, a general metalworking shop would contain facilities related to the specific occupations of machine shop, foundry work, sheet metal, and the like.

George-Barden Act

-- the federal law enacted in 1946 which provides for "the further development and promotion of vocational education in the several states and territories." It authorizes a federal appropriation for grants-in-aid to states for use in vocational programs which meet certain minimum standards in agriculture, home economics, distributive education, trade and industrial education, and vocational guidance. On August 8, 1956, fishery trades were included. The act is administered by the U.S. Office of Education, Department of Health, Education and Welfare.

Title II within the Health Amendments Act of 1956 authorized a program for the extension and improvement of practical nurse training and other similar health occupations. This Title was revised and extended with the passage of P.L. 87-22 in 1961.

Title III was added to the George-Barden Act of 1946 by an amendment provided by Title VIII of the National Defense Education Act of 1958 (P.L. 85-864) which provided "that funds appropriated...shall be used exclusively for the training of individuals designed to fit them for useful employment as highly skilled technicians in recognized occupations requiring scientific knowledge... in fields necessary for the national defense."

Grant-in-aid

-- a financial grant, frequently in the form of periodic payments, made by a government or agency to another government or agency by way of assistance for a special purpose. For example, funds are granted by the Federal Government to the states for the promotion and improvement of vocational education, under the terms of the federal vocational education acts.

Guidance services

-- those activities which have as their purpose helping pupils assess and understand their abilities, aptitudes, interests, environmental factors, and educational needs; assisting pupils in increasing their understandings of educational and career opportunities; and, aiding pupils in making optimum use of educational and career opportunities through the formulation of realistic goals. These activities include counseling pupils and parents, evaluating the abilities of pupils, assisting pupils in personal and social adjustment, and working with other staff members in planning and conducting guidance programs.

Guidance, vocational

-- the process of assisting individuals to understand their capabilities and interests, to choose a suitable vocation, and to prepare for, enter, and make successful progress in it.

High school classes in agricultural education

-- classes organized and conducted in public secondary schools for pupils who wish to secure systematic instruction in agricultural education. Such instruction is organized on graded levels dealing with exploratory agricultural experience, principles and practices in farming, agri-business, and technical agricultural occupations with emphasis on supervised participating experiences in each area.

Home economics

-- the term used to designate the discipline at the college level which prepares students for such professional fields as: home economics teaching, dietetics, cooperative extension, social welfare, public health, institution administration, research.

Home economics education

-- a program of instruction which is planned for the purpose of assisting youth and adults to understand and solve proglems in home and family living and/or to prepare for employment and upgrading in occupations involving knowledge and skills in home economics subjects. Subject-matter areas include: child development; family relationships; food and nutrition; clothing and textiles; family economics and home management; housing, home furnishings and equipment; and, family health.

Home experiences and projects

-- learning activities related to personal and family problems which are planned, carried out, and evaluated by the pupils in their homes, under the guidance of the teacher and parents, for the purpose of personal development and improvement of home life.

Homemaking education

-- a term frequently used to designate secondary and adult programs which have as their goal education for home and family living.

Home mechanics course

-- a course in the construction and repair of simple, household equipment and the understanding and maintenance of mechanical and electrical household appliances.

Home parctice

-- the practical application of specific school learnings to home activities for the purpose of developing skill in and appreciation of sound homemaking procedures.

Industrial art

-- application of the principles of design to the planning and production of manufactured products.

Industrial arts education

-- instructional shopwork of a non-vocational type which provides general educational experiences centered around the industrial and technical aspects of life today and offers orientation in the areas of appreciation, production, consumption, and recreation through actual experiences with materials and goods. It also serves as exploratory experiences which are helpful in the choice of a vocation.

Industrial education

-- a generic term applying to all types of education related to industry, including industrial arts education, vocational industrial education (trade and industrial education), and much technical education.

In-service training for teachers

-- instruction and supervision for employed instructional personnel for the purpose of improving their professional abilities.

Instruction sheets

-- written teaching aids which contain organized material for the use of individual students. There are four common types:

Operation sheet -- gives directions on how to perform a single manipulative operation
Job sheet -- gives directions on how to perform, completely and in proper sequence, the operations necessary to complete a production job
Information sheet -- contains essential facts necessary for the understanding of an instructional unit which is largely informational in nature
Assignment sheet -- directs the study to be done or assignment to be carried out by the student on the lesson topic, and may include questions to determine how well the lesson has been learned.

Itinerant teacher

-- one who teaches individuals or a group of individuals in different locations in lieu of having them come to a central point.

Job

-- a specific, assigned task which provides the media by which the student practices and develops skills for an occupation.

Job analysis

-- a detailed listing of duties, operaitons, and skills necessary to perform a clearly defined, specific job, organized into a logical sequence which may be used for teaching, employment, or classification purposes.

Joint apprenticeship council

-- a group of representatives of employers and labor, organized to cooperate with vocational schools in setting up, conducting, and maintaining standards for apprenticeship programs.

Journeyman

-- a worker who has satisfactorily completed his apprenticeship and is classified as a skilled worker in his trade.

Junior college

-- an institution of higher education which offers the first two years of college instruction, frequently grants an associate degree, and does not grant a bachelor's degree. Offerings include transfer and/or terminal programs (with an immediate employment objective) at the post-secondary instructional level and also may include adult education programs. It is an independently organized institution (public or non-public) or an institution which is a part of the public school system or an independently organized system of junior colleges. The term does not refer to the lower division of a four-year institution, even if this lower division is located on a campus entirely different from the campus of the parent institution.

Local director of vocational education

-- the school administrator appointed to supervise the total vocational education program in a school district.

Manpower Development and Training Act

-- a federal act administered by the Department of Labor and the Department of Health, Education, and Welfare. Its function is the training of the unemployed and underemployed as well as the retraining of persons who are displaced due to automation and technological changes.

Multiple-activity general shop

-- a school shop designed and equipped to offer two or more areas of instruction in industrial arts. Such a shop may contain facilities for teaching drawing, woodworking, metalworking, graphic arts, and electricity, or a similar combination of teaching areas. It is sometimes called general shop, comprehensive (composite) general shop, or laboratory of industries.

Occupational information

-- systematically organized data used by guidance personnel for the purpose of helping persons make a vocational choice. Material concerns the nature of the work, duties, responsibilities, and compensations involved in the several vocations, including information about employment outlook, promotional opportunities, and entrance requirements.

Occupational standard

-- an established measure for judging the quality of work performed in a trade or occupation.

Office education

-- a vocational education program for office careers through initial, refresher, and upgrading education leading to employability and advancement in office occupations.

Office education curricula

-- a series of related and required courses leading to vocational competency in a specific occupational category which is taken in addition to the required subject matter taken by all students. Typical occupational curricula include: (a) stenographic, typing, filing, and related occupations, (b) computing and accounting occupations, (c) material and production and recording occupations, (d) information and message distribution occupations, (e) accounting, auditing, budget, and management analyst occupations, (f) personnel and training administration occupations, (g) administrative specialization occupations, (h) miscellaneous clerical occupations, (i) supervisor office position occupations, (j) management office facilitation function, (k) data processing occupations.

Office occupations

-- those activities - performed by individuals in public and/or private enterprices - which are related to the facilitating function of the office. They include such items as recording and retrieval of data, supervision and coordination of office activities, communication, and reporting of information regardless of the social, economic or governmental organization in which they are found. The Dictionary of Occupational Titles provides a source of information concerning the nature of office occupations.

On-the-job training

-- instruction in the performance of a job given to an employed worker by the employer during the usual working hours of the occupation. Usually the minimum or beginning wage is paid.

Opportunity school

-- a term applied to a school providing specialized courses to meet widely varied adult needs such as those of illiterates, applicants for naturalization, workers needing retraining, or adults seeking various types of vocational training.

Part-time programs, vocational

-- programs conducted for workers during the usual working hours of the occupation. The three general kinds follow:

Part-time trade extension classes -- instruction given to employed workers for the purpose of increasing or extending their skill and knowledge in the trade or have been engaged.

Part-time trade preparatory classes -- instruction given to workers who have left the full-time school for the purpose of fitting themselves for useful employment in trades, occupations, or fields of industry other than those in which they are or have been employed.

Part-time general continuation classes -- instruction given to employed persons for the purpose of enlarging their civic or vocational intelligence. Instruction is not confined to trade or industrial pursuits but may cover any subject relative to civic or vocational needs offered to workers who return to the school during their usual working hours.

Placement service

-- assistance in helping persons to locate work, either part-time or full-time in the field for which they are trained, which is consistent with their abilities, experiences, and backgrounds. When offered by the school, it is a phase of the vocational guidance program and involves liaison with employers to learn of job vacancies and success or failure factors of student-learners or graduates.

Planning center (industrial arts)

-- the area in a shop or laboratory where mechanical drawing equipment, magazines, reference and textbooks are available for students to use when developing shop jobs or projects.

Planning sheet (industrial arts)

-- a prepared form to aid pupils in learning how to organize their work effectively.

Plant training

-- any type of instruction given by the employer in his own establishment during working hours.

Practical arts education

-- a type of functional education predominantly manipulative in nature which provides learning experiences in leisure-time interests, consumer knowledge, creative expression, family living, manual skills, technological development, and similar outcomes of value to all.

Practical nurse education

-- a program offering training in approved schools and leading to licensure as a practical or vocational nurse. The trainee is being prepared to (a) give direct nursing care to patients whose health situation is relatively stable, (b) assist qualified professional nurses in caring for patients whose health situation is more complex. The minimum requirements are set by the state board for vocational education while it is accredited by the profession for meeting desirable standards and licensed by the state in order to protect society from malpractice and incompetent individuals.

Pre-employment training

-- organized, brief, intensive instruction for entrance into employment in a specific job or retraining for workers leading to new duties or a new position.

Preparatory training

-- programs preparing enrollees for employment.

Private vocational school

-- a school established and operated by an agency other than the state or its subdivisions, and supported by other than public funds, which has as its purpose the preparation of students for entrance into or progress in trades or other skilled occupations.

Professional education course

-- courses that deal with the study of the history, philosophy, psychology, content, methods, etc., of education.

Progress chart

-- a running record showing the operation, jobs, projects, or other assignments completed by the individual students in a class.

Project

-- an article, activity, investigation, or problem chosen by or assigned to a student. The student is assisted by the teacher in its planning and completion.

Project method (industrial arts and homemaking)

-- a motivating technique of instruction in which the teaching units are combined and related to normal life activities being encountered by the students.

Public service training

-- vocational courses organized to train persons, such as firemen or policemen, employed in state or municipal departments.

Public vocational school

-- a secondary school under public supervision and control and supported by public funds which provides instruction that will enable high school youth and adults to prepare for, enter, and make progress in a skilled trade or occupation of their choice.

Regional conference or clinic

-- a meeting (usually annual) of representatives of several states. The sessions are called by the U.S. Office of Education, for the purpose of dealing with problems of common interest to the states represented. Meetings may be confined to a single phase of vocational education or may include them all; regional conferences are called by the Commissioner; clinics are called by the Division of Vocational Education.

Rehabilitation, vocational

-- the service of preparing disabled persons for remunerative employment through diagnosis, guidance, physical restoration, training, and placement.

Reimbursable vocational program

-- a class or curriculum - offered through a public school, teacher-training institution or under contract - which is organized and conducted in accordance with the provisions of the state plan for vocational education approved by the U.S. Office of Education. Such programs are eligible to receive funds from the state (from state and federal vocational education appropriations) to cover in part certain costs already incurred. Whether or not aid actually is received is immaterial.

Related subjects

-- classroom and laboratory courses designed to increase knowledge, understanding, and ability to solve technical and theoretical problems concerned with a particular occupation.

Resource person

-- a person who is a participant in a discussion concerning a problem or subject. His extensive experience and broad knowledge of the subject enable him to render authoritiative opinions.

Retraining programs

-- courses which provide an occupational changing type of instruction serving to prepare persons for entrance into a new occupation or to instruct workers in new, different skills demanded by technological changes.

School farm (school farm laboratory)

-- a farm, or farm land, - owned or leased by the public school and farmed by students - used to facilitate instruction in vocational or general agriculture.

Service occupations

-- those occupations which have as their primary purpose the rendering of personal service to the customer or maintenance of existing equipment.

Short-unit course

-- a self-contained training program of relatively short duration for the purpose of giving instruction in a single phase of a subject or in the operation of a specific machine.

Skilled mechanic

-- one competent to perform, with a high degree of expertness, the work in one or more specialized divisions of a given trade.

Skilled operator

-- one competent to perform efficiently and expertly one or more kinds of repetitive production or single purpose jobs on machines or other special equipment demanding manual dexterity.

Smith-Hughes Act

-- the basic federal vocational education act, passed in 1917, which established the principles of federal financial aid and cooperation with the states in promoting public vocational education (not leading to a baccalaureate degree) in agriculture, trade and industries, and home economics for persons 14 and over. It includes a permanent appropriation and is administered by the U.S. Office of Education. Department of Health, Education, and Welfare.

State Board for Vocational Education

-- the agency, created by a state, having major responsibility for the administration and general supervision of vocational education in that state. It is responsible for maintaining certain minimum standards in the expenditure of federal funds allotted to the state for vocational education.

State director for vocational education

-- an administrator designated within the state to be directly responsible to the executive officer of the state board for vocational education for the administration and operation of the total vocational education program in the state.

State Plan

-- an agreement between a state board for vocational education and the U.S. Office of Education describing (a) the vocational education program developed by the state to meet its own purposes and conditions, and (b) the conditions under which the state will use federal vocational education funds (such conditions must conform to the federal acts and the official policies of the U.S. Office of Education before programs may be reimbursed from federal funds).

State reports

-- annual statements by a state board for vocational education to the U.S. Office of Education, concerning the enrollments and the receipts and expenditures of money, showing that federal funds have been expended in accordance with the federal acts and the rules and regulations of the U.S. Office of Education, and that federal funds have been matched by total state and local funds. It includes a descriptive account of the progress of vocational education within the state.

Steering committee

-- a group of qualified persons appointed to give direction to a project in its initial stages and usually followed by an advisory committee to establish policies and operating procedures.

Student learner (student worker)

-- a member of a high school cooperative education program legally employed as a part-time worker and so classified by the Wage and Hour and Public Contracts Divisions of the U.S. Department of Labor for wage and hour regulation purposes.

Student teacher

-- a person enrolled in a school of education who has been assigned to assist a regular teacher in a real school situation. No compensation is paid for this service.

Supervised agricultural activities

-- an integral part of the training program provided by the school either in a school laboratory adequate in scope and facilities, on the home farm or a school-selected farm where student participating experiences are supervised by the instructor involved, and/or in other selected agricultural businesses and agricultural occupations where experiences also are supervised by the instructor.

Supervising teacher

-- an experienced teacher who is responsible for directing the practice teaching activities of student teachers.

Supervisor

-- the professional person responsible for the promotion, development, maintenance, and the improvement of instruction in a given field. Supervisors may operate at the local, area, or state level and much of their work is concerned with in-service training for vocational teachers.

Supervisory training

-- organized instruction to assist foremen and supervisors, in industry and business, in various phases of their work including training workers, personnel relations, and legislation.

Survey, community

-- a fact-finding study of socio-economic conditions and resources, community agencies, industries, business, farming, institutional practices, problems and practices of families, etc., as they exist at a given time in a given community. It is used by the school as a guide in revising school offerings to meet local needs.

Survey, occupational

-- an investigation and evaluation to gather information about a single industry or the occupations of an area to determine the need for training, the prevalent practices, the labor supply and turnover, for the purpose of maintaining the vocational program at a realistic level.

Survey, vocational education

-- a study to obtain necessary information as a basis for the proper development of programs of vocational education. It serves to identify the needs for vocational training, recommend suitable types of classes, assist in the development of new instructional processes, and evaluate the results of work already done.

Teacher certification

-- the approval action, based on minimum standards adopted in the state, taken by legally authorized school authorities on the professional and technical qualifications of teachers.

Teacher-education institution

-- an educational agency responsible for the proper preparation of teachers. Each state board for vocational education designates the institutions within the state responsible for the preparation of vocational teachers.

Teacher-educator (teacher-trainer)

-- a qualified professional person responsible for the preparation and in-service training of teachers. He assists teachers or prospective teachers to secure the professional knowledge, ability, understanding, and appreciation which will enable them to meet certification requirements or advance in teaching positions.

Teaching aid

-- an auxiliary instructional device, such as a chart, drawing, picture, film, mock-up or a working model, intended to facilitate learning.

Teaching load

-- a term used to designate the number of hours per day or week and the number of students assigned to an individual teacher.

Technical agriculture

-- an inclusive term which embraces a cluster of agricultural occupations engaged in the science, mechanical, and technical phases of production, distribution, manufacturing, use, processing, and marketing of farm products.

Technical education

-- education to earn a living in an occupation in which success is dependent largely upon technical information and understanding of the laws of science and principles of technology as applied to modern design, production, distribution, and service.

Technical high school

-- an educational institution at the secondary level which is vocational in objective, technical in subject matter content, and usually terminal in character.

Technical institute

-- a school at the post-high school level which offers technical education in one or more fields to prepare people for employment in positions which lie between the skilled workers and professional scientists or engineers.

Technician (industrial)

-- a worker on a level between the skilled tradesman and the professional scientist or engineer. His technical knowledge permits him to assume some duties formerly assigned to the graduate engineer or scientist. For example, technicians may design a mechanism, computer the cost, write the specifications, organize the production, and test the finished product. There are technicians in other occupational fields.

Technology

-- the application of scientific principles in research, design, development, production, distribution, or service. It often is used to denote a segment of the applied sciences, i.e., electronic technology.

Terminal course

-- one which completes the subject matter of a specific area with employment as the immediate objective.

Trade analysis

-- the procedure of breaking down a trade or occupation to determine the teachable content in terms of operations, tools, processes, and technical information to be organized into a course of study and arranged according to a sequence of difficulty.

Trade and industrial education

-- instruction which is planned to develop basic manipulative skills, safety judgment, technical knowledge, and related occupational information for the purpose of fitting persons for initial employment in industrial occupations and upgrading or retraining workers employed in industry.

Trade and Industrial Education Clubs

-- organizations composed of vocational industrial education students whose objectives are to develop leadership qualities as they perfect their shop skills and knowledges.

Trade preparatory programs

-- education to prepare for entrance into useful employment in an industrial occupation and provide an opportunity to continue a general education. It is the type of vocational education given in full-time day trade or technical institute classes.

Trade school

-- a public or private vocational school which trains youths and adults in the skills, technical knowledge, related industrial information, and job judgment necessary for success in one or more skilled trades. These schools provide opportunity also for continuation of general education.

Training agreement

-- an outline of learning experiences an employer agrees to provide for a student learner enrolled in the various cooperative education programs.

United States Office of Education

-- a division of the Federal Government, within the Department of Health, Education, and Welfare, established by Congress in 1867 for the purpose of advancing the cause of education throughout the nation. The Division of Vocational and Technical Education in the Office of Education is responsible for the administration of the vocational education acts including the allocation of federal funds to the states for vocational education.

Unit of instruction

-- the smallest division of instruction for which a full lesson is taught. A single operation in a trade may constitute a unit of instruction.

Unit shop

-- a school shop designed and equipped to provide training in a single industrial occupation or a single kind of material or type of work.

Unit trade course

-- instruction organized for persons attending full-time school and preparing for advantageous entrance into a specific trade or industrial pursuit. Courses are based solely on instruction for a particular trade or occupation.

Upgrading or updating training

-- supplemental or extension training for the purpose of advancement or improving a worker's efficiency.

Vestibule training

-- a program organized in the plant, by the employer, for the short, intensive, preliminary training or "breaking in" of new employees on special machines and operations.

Vocational and technical education

-- training intended to prepare the student to earn a living in an occupation in which success is dependent largely upon technical information and an understanding of the laws of science and technology as applied to modern design, production, distribution, and service.

Vocational curriculum

-- a carefully selected group of courses or a sequence of subjects the content of which will provide the necessary skill and knowledge for success in a specific occupation.

Vocational education

-- "vocational or technical training or retraining which is given in schools or classes (including field or laboratory work incidental thereto) under public supervision and control or under contract with a state board or local educational agency, and is conducted as part of a program designed to fit individuals for gainful employment as semi-skilled or skilled workers or technicians in recognized occupations (including any program designed to fit individuals for gainful employment in business and office occupations, and any program designed to fit individuals for gainful employment which may be assisted by federal funds under the Vocational Education Act of 1946 and supplementary vocational education acts, but excluding any program to fit individuals for employment in occupations which the Commissioner determines, and specifies in regulations, to be generally considered professional or as requireing a baccalaureate or higher degree). Such term includes vocational guidance and counseling in connection with such training, instruction related to the occupation for which the student is being trained or necessary for him to benefit from such training, the training of persons engaged as, or preparing to become, vocational education teachers, teacher-trainers, supervisors, and directors for such training, travel of students and vocational education personnel, and the acquisition and maintenance and repair of instructional supplies, teaching aids, and equipment, but does not include the construction or initial equipment of buildings or the acquisition or rental of land."*

*as defined in Public Law 88-210.

Vocational Education Act of 1963

-- enacted "to authorize federal grants to states to assist them to maintain, extend, and improve existing programs of vocational education, to develop new programs of vocational education, and to provide part-time employment for youths who need the earnings from such employment to continue their vocational training on a full-time basis, so that persons of all ages in all communities of the states - those in high schoo, those who have completed or discontinued their formal education and are preparing to enter the labor market, those who have already entered the labor market but need to upgrade their skills or learn new ones, and those with special educational handicaps - will have ready access to vocational training or retraining which is of high quality, which is realistic in the light of actual or anticipated opportunities for gainful employment, and which is suited to their needs, interests, and ability to benefit from such training."*

Vocational school

-- a school which is organized separately under a principal or director for the purpose of offering training in one or more skilled or semi-skilled trades or occupations. It is designed to meet the needs of high school students preparing for employment and to provide upgrading or extension courses for those who are employed.

Vocational subject

-- any school subject designed to develop specific skills, knowledges, and information which enable the learner to prepare for or to be more efficient in his chosen trade or occupation.

Work experience

-- employment undertaken by a student while attending school. The job may be designed to provide practical experience of a general character in the work-a-day world.

Work experience education (occupational experience)

-- employment undertaken as part of the requirements of a school course and designed to provide planned experiences, in the chosen occupation, which are supervised by a teacher-coordinator and the employer.

Work study program

-- administered by the local educational agency and made reasonably available (to the extent of available funds) to all eligible youths in the area served by such agency. Employment under the program may be for the local educational agency or some other public agency or institution and will be furnished only to students who (a) have been accepted for enrollment as full-time students in an approved vocational education program, (b) need earnings to continue their vocational education, and (c) are at least 15 and less than 21 years of age. No student shall be employed under the program more than 15 hours in any class week or paid more than $45 in any month or $350 in any academic year, except in special cases.

*as defined in Public Law 88-210

Young Farmer Association

-- the organization of students enrolled in young farmer classes. Objectives are to provide leadership training on a participating basis and to help bridge the gap between membership in farm youth organizations and adult farm associations.

Young-farmer classes

-- groups of farmers, usually between 16 and 25 years of age and not otherwise enrolled in school, who are taught by regular or special teachers of vocational agriculture to aid them in becoming satisfactorily established in farming.

CONSTRUCT A LESSON PLAN

Module No. 4

Department of Vocational and Technical Education
University of Minnesota

March 1975

TABLE OF CONTENTS

	Page
Title Page	1
Introduction	2
Performance Objectives	3
References, Equipment and Materials Needed to Complete This Module	4
Learning Experience - Performance Objectives and Directions	5
Supplements	
Learning Experience - Information Sheet	6
Lesson Plan Formats	9
Learning Experience - Learning Activities	11
Learning Experience - Test	12
Learning Experience - Checklist	13
Module No. 4 - Teacher's Evaluation	14

Module No. 4 - Title Page

Construct a Lesson Plan

Prerequisites: Completion of the following modules:

1. No. 1 - Audio-Visual Equipment and Materials
2. No. 2 - Writing Behaviorally-Oriented Objectives
3. No. 3 - Overview of Development and Planning for a Course

Directions:

1. Be sure you have successfully completed all prerequisites.
2. a. Read the Introduction on p. 2.
   b. Read the Performance Objectives on p. 3.
3. If you think you are prepared for the assessment without studying this module, see p. 12 for the test and p. 13 for self-evaluation.
4. If you have successfully completed the test and self-evaluation, proceed to the next module.
5. If you were not successful or if you choose not to be assessed now, proceed with this module.
   a. Read the References listed on p. 4.
   b. Read the Learning Experience on p. 5.

Note: Your resource person is available to help you while you are studying this module.

Introduction

The purpose of this module is to provide information on how to plan a lesson for instruction. Lesson plans are detailed or expanded parts of unit or course plans. Lesson plans list specific learning objectives and describe how instruction will be organized in order to be maximally meaningful to the students. There are probably as many lesson plan formats as there are instructors, however, all formats include some necessary elements. You might choose different lesson plan formats for different types of lessons (i.e. a lecture-discussion, a demonstration, a lab exercise). The format should provide as much structure as is necessary to assist the teacher in the presentation. The lesson plan should also include descriptions of the learning activities in which students will engage to accomplish the objectives of the lesson. The way in which student accomplishment of the lesson objectives will be evaluated should also be described.

Performance Objectives

Upon completion of this module, the terminal performance expected is expressed in the

Terminal Objective:

Using your occupational specialty you will plan for a lesson.

The performance expected as a terminal objective is further clarified in Enabling Objectives:

1. List the learning objectives for the lesson.
2. List the essential elements of the lesson plan.
3. Identify the student activities for achievement of the lesson objective.
4. Evaluate the plan in accordance with the objectives of the lesson.

References, Equipment, and Materials Needed
to Complete This Module

1. Mager, R. and Beach, K. Developing Vocational Instruction. Belmont, California: Fearson Publishers, 1967.

2. Pucel, D., and Knaak, W. Individualizing Vocational and Technical Instruction. Columbus, Ohio: Charles E. Merrill Publishing Co., 1975 (only recommended, not required).

3. Video tape recorder and playback equipment.

4. Video tape - blank.

Learning Experience - Performance
Objective and Directions

Objective

Using your occupational specialty you will plan for a lesson.

Read:
1. Mager, R. and Beach, K. Developing Vocational Instruction, (reference No. 1, pp. 62-67).
2. Learning Experience - Information Sheet on p. 6.
3. Pucel, D., and Knaak, W. Individualizing Vocational and Technical Instruction, (reference No. 2, only recommended, not required).

Practice: Follow the instructions in Learning Activities on p. 11.

Evaluate:
1. Complete the self-administered test on p. 12 and the checklist on p. 13.
2. For your evaluation discuss your written answers with your resource person.
3. If you were successful in your evaluation, proceed to the next module.

Supplements

Module No. 4: Construct a Lesson Plan

Learning Experience - Information Sheet

Ordinarily, lesson plans are detailed or expanded parts of unit or course plans. The lesson plan helps teachers to organize what they are going to teach in a particular lesson, how they will do it, and how they will evaluate student performance at the end of a lesson.

A lesson is a unified segment of instruction. It should be completed in one class period of instruction. If a lesson requires more than one class period, it should probably be divided into more than one lesson. However, a lesson dealing with a relatively simple skill or principle may require only part of a class period, in fact, only a few minutes. In any case, the lesson plan should include all of the elements indicated below.

Lesson plans can and do take a number of different forms; however, there are certain elements that should be included in any lesson plan: objectives, content, learning activities, teaching strategy, equipment, materials and evaluation. These will be discussed in more detail below.

Good lesson plans should be neither too general nor too specific. A lesson plan that is too general will not give you necessary information and guidance for your lesson. Too detailed plan will divide your attention between the class and your notes. It is difficult to follow the lesson plan and teach the class at the same time.

Obviously, the optimum length for a lesson plan is determined by the type of lesson being taught; however, the teacher should prepare a lesson plan which will facilitate ongoing instruction. As a rule of thumb, a lesson plan should not exceed one page in length.

The elements that a lesson plan should contain include the following:

1. Objectives: The objective or objectives should be stated in terms of observable and measurable behavior. The objectives should be covered

in the introduction to the lesson.

Note: In module No. 5 you will learn how to introduce a lesson.

2. Content: An outline of the concepts, facts, and examples which are related to the achievement of the lesson and the course objectives should appear in the plan.

3. Learning Activities: A lesson plan should include a description of the activity which students will engage in during the achievement of the objective. It is essential that the activities be planned to help students to accomplish the objective. This does not mean that during the lesson a teacher is not at liberty to alter his objective and its related learning activities as he judges necessary.

4. Strategy: A list of teaching strategies should be included in the lesson plan. This list will be closely related to the learning activities and should contain questions, examples, problems to be solved, etc. The selection of proper teaching strategies depends on what type of a lesson (lecture, lab exercise, etc.) will be taught, what content will be taught, the objective of a lesson, prior student experiences, attitudes, and feedback.

Note: In module No. 6 you will learn some basic teaching strategies.

5. Equipment and Materials: The teacher should list the equipment and materials required during the lesson.

6. Evaluation: A description of the evaluation procedure planned for the lesson should be included. The evaluation should determine whether or not the students have achieved the lesson objective or objectives.

You have read about the essential elements of a lesson plan. Now it becomes necessary to select or develop your own format that you will use for your lesson plan. Attached (p. 9) are samples of formats.

Conclusion:

Competent teachers plan their work and provide students with opportunities to move toward established goals. Lesson plans provide the teacher with the structure and planning for a lesson which is necessary for working successfully with students.

Note: If you are a teacher in a school which prefers an individualized instruction method, your preparation for a lesson will be different. There are so many different types of individualized instruction that your planning for a lesson will depend on what your school situation requires. The basic difference between individualized lessons and lessons taught in groups is student self-pacing. The basic elements of a lesson plan described previously will also be included in a lesson for individualized instruction. In some vocational schools there is no particular time allotted for a lesson.

You should plan for every particular student and you should be prepared at any time to help him achieve his objective. You should follow the progress of every student from the beginning of a course and provide feedback to students about their achievements.

If you are deeply interested in planning the individualized instruction you will find detailed information in Pucel, Knaak (1975).

DAILY LESSON PLAN FORM

Course Title_____Teacher_____

Problem Area:

Problem or Topic:

Objectives:

Teaching materials, equipment, references and learning resources:

Motivation:
(Review Questions)

(Questions and activities)

Student Learning Activities:

Teaching Procedure:

Assessment Tasks:

LESSON PLAN

Lesson Unit Objectives: _____

Procedure	Student Activity	Est. Time	Assessment

Learning Experience - Learning Activities

After studying this Learning Experience you should perform the following activities:

1. Develop a lesson plan format.
2. Prepare the lesson plan in your occupation which would include the essential elements.
3. Discuss your lesson plan with your resource person. Do the corrections you both agreed on.

Learning Experience - Test

Complete the following test items:

1. Submit corrected lesson plan which you prepared in Learning Activities item No. 2.

2. What are the basic differences in teaching-learning process between groups and individually taught lesson?

After you have finished this test and the checklist on p. 13, discuss your responses with your resource person.

Learning Experience - Checklist

Directions: You will use this checklist for your own evaluation. Please answer the following questions by circling one of three possible responses:

Did you in your lesson plan

a. include all essential elements? yes not certain no

b. relate the information and skills acquired in the lesson to the overall objective of the course? yes not certain no

c. relate the information and skills acquired in the lesson to the objective of the lesson? yes not certain no

d. consider the amount of time required to learn material presented? yes not certain no

e. plan alternate learning activities to help students reach their objective? yes not certain no

Module No. 4 - Teacher's Evaluation

Teacher's evaluation of the learning process offered in this module.

Dear Colleague:

We would like to have some of your impressions of this module. We need these impressions for the evaluation of our program which you are now studying.

Would you, please, answer the following questions by circling one of three possible responses? Thank you for helping us.

The Program Authors

Evaluation of This Module

Questions			
Was this module interesting to you?	yes	not much	no
Was this module written clearly?	yes	not much	no
Was this module too short?	yes	not much	no
Was this module too long?	yes	not much	no
Was this module directed to the most important learning points only?	yes	not much	no
Did you understand the objectives of this module?	yes	not much	no
Did the books and/or articles recommended in this module			
a. relate to the content of this module?	yes	not much	no
b. help you in the achievement of objectives?	yes	not much	no
Did the video tapes, tapes and/or other aids recommended in this module			
a. relate to the content of this module?	yes	not much	no
b. help you in the achievement of objectives?	yes	not much	no
Did the learning activities			
a. relate to the content of this module?	yes	not much	no
b. help you in the achievement of objectives?	yes	not much	no
Were the test and checklist items			
a. worded clearly?	yes	not much	no
b. concentrated to the most important points of your learning?	yes	not much	no
Did the checklist help you in your evaluation?	yes	not much	no
Did you learn from this module what you had expected?	yes	not much	no

Your special comments:

What do you think should be improved in this module?

PLAN AND EXECUTE AN INTRODUCTION AND A SUMMARY FOR A LESSON

Module No. 5

Department of Vocational and Technical Education
University of Minnesota

March, 1975

Table of Contents

	Page
Title Page	1
Introduction	2
Performance Objectives	3
References, Equipment and Materials Needed to Complete This Module	4
Learning Experience - Performance Objective and Directions	5
Supplements	
Learning Experience - Information Sheet	6
Learning Experience - Learning Activities	9
Learning Experience - Test	10
Learning Experience - Checklist	11
Module No. 5 - Teacher's Evaluation	12

Module No. 5 - Title Page

Plan and Execute an Introduction and a Summary for a Lesson

Prerequisites: Completion of the following modules:

1. No. 1 - Audio-Visual Equipment and Materials
2. No. 2 - Writing Behavioral-Oriented Objectives
3. No. 3 - Overview of Development and Planning a Course
4. No. 4 - Construct a Lesson Plan

Directions:

1. Be sure you have successfully completed all prerequisites.
2. a. Read the Introduction on p. 2.

   b. Read the Performance Objectives on p. 3.
3. If you think you are prepared for the assessment without studying this module, see p. 10 for the test and p. 11 for self-evaluation.
4. If you have successfully completed the test and self-evaluation, proceed to the next module.
5. If you were not successful or if you choose not to be assessed now, proceed with this module.

   a. Read the References listed on p. 4.

   b. Read the Learning Experience on p. 5.

Note: Your resource person is available to help you while you are studying this module.

Introduction

In this module you will be shown how an introduction and a summary of a lesson should be planned and executed. Your success will depend on your creative ability to apply the content of this module in real conditions: in front of your students. The good introduction motivates your students and prepares them for what they are about to learn. If they are interested in what they are going to learn in the lesson, it is likely that they will succeed in learning. The summary of the lesson is also important. The students will create a structure in which they will continuously organize the information that they have gained. After the summary of the lesson, they will realize much better the relations between knowledge and skills that they have learned in this particular lesson and in previous ones.

Performance Objectives

Upon completion of this module, the terminal performance expected is expressed in the

Terminal Objective:

You will plan and execute an introduction and a summary of a lesson in your course.

The performance expected as a terminal objective is further clarified in

Enabling Objectives:

1. Describe the elements of an introduction and a summary of a lesson.
2. State the lesson objectives explicitly to your students.
3. Provide the students with the acceptable reason for accomplishing the objectives of the lesson.
4. Relate the lesson to a previous lesson and to students' own experiences and knowledge.
5. Conclude the lesson repeating the major points of the lesson.
6. Involve the students in summarizing the lesson.

References, Equipment and Materials Needed
to Complete This Module

1. Video tape: Execution of Instruction
2. Video tapes - blank
3. Video tape playback deck and recording equipment
4. Tape recorder and blank tapes
5. Mager, R. Developing Attitude Toward Learning. Palo Alto, California: Fearson Publishers, 1968.

Learning Experience - Performance Objective and Directions

Objective

You will plan and execute the introduction and the summary of the lesson in your course.

Watch: Video tape "Execution of Instruction"

Read: 1. Mager, R. Developing Attitude Toward Learning, (reference No. 5, first 12 pages)

2. Learning Experience - Information Sheet on p. 5.

Practice: Follow the instructions in the Learning Activities on p. 9.

Evaluate: 1. Complete the self-administered test on p. 10 and the checklist on p. 11.

2. For your evaluation discuss your written answers and your performance on the video tape with your resource person.

3. If you were successful in your evaluation, proceed to the next module.

Supplements

Module No. 5: Plan and Execute an Introduction and A Summary for A lesson

Learning Experience - Information Sheet

You have watched the video tape "Executing of Instruction", which provided information about how to introduce and summarize a lesson. How to select and use other teaching strategies was also discussed in that video tape.

You have been shown how to go smoothly through an introduction of a lesson to the real teaching-learning situation and finally to a lesson conclusion.

You have read several pages of the book (Mager, 1968) related to the content of this module.

You have also studied successfully the module No. 4 "Construct a lesson plan".

While reading the following pages, realize, please, the relations between your reading and what you had watched, studied, and read before. Try to build some structure based upon all the knowledge and skills that you have gained.

Planning and executing an introduction of a lesson

While writing the lesson plan you should make some notes on how you will introduce your particular lesson. Put down several points in proper sequence which could occur in an introduction of any lesson of your course. Follow them while planning the introduction of any lesson in your course and adjust them for the particular lesson. You will see some of these points underlined in the following text.

"What is the reason for the introduction"? someone might ask. There are several reasons. One of them is concentration. After a break or at the beginning of a class period the students do not immediately concentrate on the topic to be studied. Several sentences which may not relate to the content of the lesson can switch their attention to you.

Try to create a warm personal contact with your students when you meet them for the first time. You can expect much better learning results if you do. Do not stand in front of them like a cold fish. Your friendly and respectful behavior will

encourage the students to learn, ask questions, and cooperate with you in working toward the accomplishment of the learning objectives. This is the important part in the motivation of your students.

When you have succeeded in creating a friendly environment you can prepare your students for the contents of your instruction. You should review the topics of the last lesson to refresh the students' memories. The students have to know what you will be talking about and what they will do in the lesson. They should know what they will learn and why, and what they will be able to perform at the end of the lesson.

After the introduction has been completed, you will begin the instruction which may include lecturing, discussion, practical work in a workshop or some other instructional activities.

Planning and executing a summary of a lesson

The procedure of planning and executing a summary of a lesson will be similar to that of an introduction to a lesson on p. 6.

You have to put down in your lesson plan several points which should conclude a lesson. Follow them while planning a conclusion of any lesson and adjust them to the particular content of the lesson.

After completing the main body of the lesson you should begin with a conclusion to the lesson. You will briefly summarize what the students should have learned or performed. Emphasize the most important knowledge and skills which they should have learned.

You can ask the students to repeat the high points of the lesson, or you can ask some questions related to these high points. The most important purposes of the conclusion are to emphasize the significant points which the students should learn and to provide some structure so they may relate these points to each other and learnings they have acquired previously.

Do not take the students' break time for your lesson. After the bell rings they will not pay attention to your comments anyway.

Conclusion

While preparing and executing the introductions and summaries of your lessons or other teaching-learning strategies, realize that you cannot find a teaching strategy that will fit all subject matter or all students. You can be given some hints and examples but you will continue to seek better ways to teach. You will work with young ambitious people who want to learn. How much and how well they will learn will depend on more than how good you are in your occupational field. It will also depend on your attitude toward your students and how well you apply the different teaching strategies.

If you want to be a good teacher, be fair and friendly to your students, do not look down on them, be patient, be well prepared for every lesson. On the other hand remember that your students' learning generally will be more efficient if they actively participate in the learning process.

Note. If the students learn only by learning packages, every student will progress at his own pace. The introductions and summaries should be written in all learning packages as it is in this module. Your position will be similar to that of your resource person.

Learning Experience - Learning Activities

After studying this module try to prepare the introduction and the summary of the particular lesson.

1. Follow the hints you were given in this module and think out your own ideas also. Put them down.

2. Imagine yourself in front of the students and try to introduce and summarize the lesson by the notes you have prepared. Use a tape recorder to record your performance. Use the class or workshop environment without students.

3. Listen to your introduction and summary making some notes on what, in your own opinion, should be done better.

4. If you have the opportunity to be video taped at least once before you stand in front of the students, it will help you more than being tape recorded only.

Note: Expecially while practicing you should ask your resource person for help.

Learning Experience - Test

Answer in brief written form test item No. 1.

Perform test item No. 2. Your performance will be video taped.

After you have finished this test and the checklist on p. 11, discuss your answers and performance with your resource person.

Test items:

1. Plan the introduction and the summary of any lesson of the course in your occupational field.

2. Execute the introduction and the summary of the lesson in front of the students. Use the plan prepared in test item No. 1.

Learning Experience - Checklist

Directions: You will use this checklist for your own evaluation. Please answer the following questions by circling one of three possible responses:

1. After introducing the lesson to your students, did they:

   a. know what the purposes of the lesson would be? yes not certain no

   b. show an interest in the contents of the lesson? yes not certain no

   c. show an interest in the activities in the lesson? yes not certain no

   d. know what they were expected to perform at the end of the lesson? yes not certain no

   e. see how this lesson related to something they had learned previously? yes not certain no

2. After the conclusion of the lesson, were your students able to:

   a. identify the most important knowledge and skills which they should have learned in the lesson? yes not certain no

   b. relate the knowledge and skills gained in this and previous lessons to an overall structure? yes not certain no

Level of Acceptance:

If you answered either no or not certain to any question above, you will decide cooperatively with your resource person what part of this module you should study again.

Module No. 5 - Teacher's Evaluation

Teacher's evaluation of the learning process offered in this module.

Dear Colleague:

We would like to have some of your impressions of this module. We need these impressions for the evaluation of our program which you are now studying.

Would you, please, answer the following questions by circling one of three possible responses? Thank you for helping us.

The Program Authors

Evaluation of This Module

Questions			
Was this module interesting to you?	yes	not much	no
Was this module written clearly?	yes	not much	no
Was this module too short?	yes	not much	no
Was this module too long?	yes	not much	no
Was this module directed to the most important learning points only?	yes	not much	no
Did you understand the objectives of this module?	yes	not much	no
Did the books and/or articles recommended in this module			
a. relate to the content of this module?	yes	not much	no
b. help you in the achievement of objectives?	yes	not much	no
Did the video tapes, tapes and/or other aids recommended in this module			
a. relate to the content of this module?	yes	not much	no
b. help you in the achievement of objectives?	yes	not much	no
Did the learning activities			
a. relate to the content of this module?	yes	not much	no
b. help you in the achievement of objectives?	yes	not much	no
Were the test and checklist items			
a. worded clearly?	yes	not much	no
b. concentrated to the most important points of your learning?	yes	not much	no
Did the checklist help you in your evaluation?	yes	not much	no
Did you learn from this module what you had expected?	yes	not much	no

Your special comments:

What do you think should be improved in this module?

Select and Execute Different Teaching Strategies

Module No. 6

Department of Vocational and Technical Education
University of Minnesota

March 1975

Table of Contents

	Page
Title Page	1
Introduction	2
Performance Objectives	3
References, Equipment and Materials Needed to Complete This Module	4
Learning Experience - Performance Objective and Directions	5
Module No. 6 - Teacher's Evaluation	6

Module No. 6 - Title Page

Select and Execute Different Teaching Strategies

Prerequisites: Completion of the following modules:

1. No. 1 - Audio-Visual Equipment and Materials
2. No. 2 - Writing Behaviorally-Oriented Objectives

Directions:

1. Be sure you have successfully completed all prerequisites.
2. a. Read the Introduction on p. 2.
   b. Read the Performance Objectives on p. 3.
   c. Read the References on p. 4.
   d. Read the Learning Experience on p. 5.

Note: U of M professors and your resource person will help you while you are studying this module.

Introduction

In this module you will learn how to select and how to use teaching strategies for an instruction in a classroom and in a workshop. You will also learn what kind of teaching strategy you can apply for individualized learning.

The learning approach in this module is different from those modules which you have studied before. This module uses small group teaching strategy and learning activities.

In this module you will have the opportunity to take what you have previously learned in this course or other courses and put it together in an instructional presentation.

You will practice verbal and non-verbal instructional presentations. You will learn how to react on your students' actions, behavior and experiences. You will learn how to use your students' feedback for the improvement of your instruction. You will practice problem-solving methods of learning which help to develop the students' technical and creative thinking. Based on your knowledge of how students learn you will practice reinforcement of their learning.

Performance Objectives

Upon completion of this module, the terminal performance expected is expressed in the

Terminal Objective:

You will select and execute different teaching strategies in your course.

The performance expected as a terminal objective is further clarified in Enabling Objectives:

1. Use at least three teaching skills in a single lesson.
2. Select and use appropriate teaching methods for instruction.

References, Equipment and Materials

Needed to Complete This Module

1. Video tape: Execution of Instruction
2. Video Tapes - blank
3. Video tape playback and recording equipment
4. Tape recorder and blank tapes

Learning Experience-Performance Objective and Directions

Objective

You will select and execute different teaching strategies in your course.

Watch: Video tape "Execution of Instruction."

Practice: Follow the instruction given by your professor.

Evaluate: You will be video taped before you start and after you finish this module. You will evaluate cooperatively both video tapes with your professor and resource person.

Module No. 6 - Teacher's Evaluation

Teacher's evaluation of the learning process offered in this module.

Dear Colleague:

We would like to have some of your impressions of this module. We need these impressions for the evaluation of our program which you are now studying.

Would you, please, answer the following questions by circling one of three possible responses? Thank you for helping us.

The Program Authors

Evaluation of This Module

Questions

Was the content of this module interesting to you?	yes	not much	no
Did you understand the objectives of this module?	yes	not much	no
Did the video tapes, tapes and/or other aids recommended in this module			
a. relate to the content of this module?	yes	not much	no
b. help you in the achievement of objectives?	yes	not much	no
Do you think that group teaching method used in this module was appropriate?	yes	not much	no
Would you prefer the self-pacing method used in previous modules in this module also?	yes	not much	no
Did you learn from this module what you had expected?	yes	not much	no

Your special comments:

What do you think should be improved in this module?